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CHECKLISTS FOR THE QUALITATIVE ASSESSMENT OF MAINTAINABILITY DE--ETC(U)

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# TECHNICAL NOTE

## CHECKLISTS FOR THE QUALITATIVE ASSESSMENT OF MAINTAINABILITY DESIGN FEATURES

30 November 1977



Prepared for  
U.S. AIR FORCE TEST AND EVALUATION CENTER  
Kirtland Air Force Base  
New Mexico 87115

Under Contract F29601-77-C-0091

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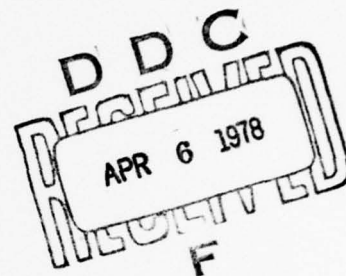
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CHECKLISTS FOR THE  
QUALITATIVE ASSESSMENT OF  
MAINTAINABILITY DESIGN FEATURES,

9 Technical note,

11 30 November 1977

12 57p.



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Publication W77-1706-TN01

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A Checklists for the Qualitative Assessment of Maintainability Design Features . . . . .	A-1
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INTRODUCTION

Under contract F29601-77-C-0091 with the Air Force Test and Evaluation Center (AFTEC), Kirtland Air Force Base, New Mexico, ARINC Research Corporation performed a document search and developed a series of checklists for the qualitative assessment of maintainability design features. This report presents the results of the checklist development efforts. ↑

2  
DATA COLLECTION AND REVIEW

Initial efforts were the identification, collection and review of documents that were potentially applicable to the development of the checklists. A total of 43 documents were identified. From this total, 21 were selected as directly applicable to the projects, 20 additional documents were duplicative of more informative sources or were not applicable for other reasons, and two were unobtainable within the time frame allotted for the project. A complete list of these documents is provided in Table 1.

TABLE 1. LIST OF DOCUMENTS

Document Number	Title
<u>APPLICABLE</u>	
AMCP 706-134	Engineering Guide for Design Maintainability Guide for Design
NAVORD OD 39223	Maintainability Engineering Handbook
AD 441653	Maintainability Engineering Guide
AD 409761	Checklist of Human Engineering Design Considerations
AD A037446	Update to R&M Planning Guide for Army Aviation Systems and Components
ARINC Publication 530-01-0-762	Reliability and Maintainability for U. S. Weather Bureau
AFSC DH 1-X	Checklist for General Design Criteria
AD 477288	Human Engineering Checklist
MIL-STD-803	Human Factors Engineering
MIL-STD-1472B	Human Factors Engineering
AFSC DH 1-3	Human Factors Engineering Design Handbook
Cummingham & Cox, 1972	Applied Maintainability Engineering
AD 101729	Guide to Design of Electronic Equipment for Main- tainability
AD 269332	Guide to Design of Mechanical Equipment for Main- tainability
AD 271477	Guide to Integrated System Design for Maintain- ability
AMCP 706-132	Maintenance Engineering Techniques Handbook
AD 828506	Maintainability Design Criteria
AD 275889	Designer's Checklist for Improving Maintainability
DLSIE #33513A	A Qualitative Maintainability Study of Range Only Radar
DH 1-9	AFSC System Command Design Handbook 1-9 Maintain- ability, 3rd Ed. - June 1976
DH 1-2	AFSC Design Handbook General Design Factors DH 1-2
<u>NOT APPLICABLE OR DUPLICATIVE</u>	
AD 905566L	Maintainability of Air Force Ground Systems
DLSIE #36455A	A Low Level Look at Maintenance and Maintainability

TABLE 1. LIST OF DOCUMENTS (continued)

Document Number	Title
DLSIE #32447	Reliability and Maintainability Planning Guide for Army Aviation Systems and Components (Handbook)
DLSIE #30080	Maintainability Analysis of Major Helicopter Components
DLSIE #33142	Army Aircraft Subsystems and Component Installation Design Investigations
DLSIE #23932A	Maintainability Engineering Design Notebook, Rev. II, and Cost of Maintainability
DLSIE #29606H	Designed for Maintainability for Product Integrity
DLSIE #22843	Maintenance Evaluation: A Tool for Effective Maintenance Engineering
AD 910954L	Maintainability Demonstration Inspections
AD 462253L	HMSH Maintainability Plan for the Programmer Definition Phase
AD 023840	Maintainability Methodology and Procedures
AD 870846	Methods for the Accomplishment of Integrated Support
AD 471857	Maintainability Engineering Guide (Note: This document is a duplicate of AD 441653)
AD 460991	Maintainability Design Factors and Operations Analysis
AD 918945	Procedures and Methodology for Logistic Support
AD 460371	Maintainability and Weapon System Management
AD 891386	An Analysis of Reliability and Maintainability in Weapon Systems Design
AD 461728	C-141A System Maintainability Evaluation Plan
AD 35382G	Orbital Space Station Study Vol. II-3, Parameter System Definition, System Considerations
AD A023890	Maintainability Methodology: Procedures
<u>NOT RECEIVED/DELETED FROM PROJECT</u>	
AD 470377	The Design of Electronic Equipment for Ease of Maintenance
(Unattainable)	Boeing Co. Report #13 Maintainability Checklist, Selective Study

3  
CHECKLIST DEVELOPMENT

Prior to the actual development of checklists, categories of subjects applicable to the qualitative assessment of maintainability features were developed. Additionally, a method was developed for coding the subject categories and the source documents for each question presented in the checklists. A typical listing follows:

AC001	A3/DN2G3/P2.4.2,A	Are captive fasteners used whenever feasible?
-------	-------------------	---

This coding format was developed for use with 80 column automatic data processing (ADP) cards. In the following explanation of the coding, the column numbers refer to those on ADP cards:

Columns 1 through 5	- Item identifiers
Columns 1 and 2	- Categories (see Table 2)
Columns 3 - 5	- Subcategories and item numbers
Column 6	- Plus (+) continuation card
Columns 7 through 26	- Reference source code
Columns 7 and 8	- Alpha number source code unique identifiers (see Table 3)
Columns 9 - 26	- Identifies the page, design note or other reference within the document. Additionally, Tables (T), Figures (F) or Paragraphs (P) are identified from which the checklist item was extracted. These letter designators are followed by the table, figure or paragraph numbers.
Column 27	- Blank
Columns 28 through 78	- Text
Columns 79 and 80	- Blank

Table 2 presents a listing of subject categories covered by the checklists. Table 3 provide a cross reference of the source code designators to the documents utilized in preparing the checklists. Appendix A is a print-out of the detailed checklists.



TABLE 2. CHECKLIST SUBJECT CATEGORIES

AA	-	Cabling
AB	-	Connectors
AC	-	Fasteners
AD	-	Miscellaneous Fittings
AE	-	Breakers and Fuses
AB	-	Accessibility
BB	-	Accesses
CA	-	Controls-General Criteria
CB	-	Types of Controls
DA	-	Displays-General Criteria
DB	-	Types of Displays
DC	-	Display Construction
DD	-	Control-Display Relationships
EA	-	Construction-General Criteria
EA1	-	Component Location and Orientation
EA2	-	Cases, Covers, Handles, Racks and Chassis
EA3	-	Packaging/Modularization
EA4	-	Standardization
FA	-	Interchangeability
GA	-	Identification/Marking
HA	-	Safety
IA	-	Test Equipment
JA	-	Test Points
KA	-	Tool Requirements
LA	-	Trouble Shooting Aids
MA	-	Human Factors, General
MA1	-	Standing Tasks
MA2	-	Seated Tasks
MA3	-	Environment
NA	-	Maintenance Design Criteria
OA	-	Maintenance Tasks



TABLE 3. SOURCE CODE LISTING

Designator	Document Number	Title
A1	NAVORD OD 39223	Maintainability Engineering Handbook
A2	AFSC DH 1-X	Checklist of General Design Criteria
A3	AFSC DH 1-3	Human Factors Engineering
A4	AFSC DH 1-9	Maintainability
A5	AFSC DH 1-2	General Design Factors
B1	MIL-STD-803	Human Factors Engineering
B2	MIL-STD-1472B	Human Factors Engineering
C1	AMCP 706-134	Maintainability Guide for Design
C2	AMCP 706-132	Engineering Design Handbook
L1	AD* 441653	Maintainability Engineering Guide
L2	AD 409761	Checklist of Human Engineering Design Considerations
L3	AD A037446	Update to R&M Planning Guide for Army Aviation Systems and Components
L4	ARINC Pub. 530-01-1-762	Reliability and Maintainability Handbook for U.S. Weather Bureau
L5	AD 1-1729	Guide to Design of Electronic Equipment for Maintainability
L6	AD 477288	Human Engineering Checklist
L7	AD 275889	Designers Checklist for Improving Maintainability
L8	AD 828506	Maintainability Design Criteria
L9	AD 271477	Guide to Integrated System Design for Maintainability
L10	AD 269332	Guide to Design of Mechanical Equipment for Maintainability
L11	DLSIE** #33513A	A Qualitative Maintainability Study of Range Only Radar
I1	None	Applied Maintainability Engineering, Cunningham and Cox, Wiley Interscience Publication N.Y. 1972

\*AD = Defense Documentation Center #

\*\*DLSIE = Defense Logistic Support Information Exchange

APPENDIX A

CHECKLISTS FOR THE  
QUALITATIVE ASSESSMENT OF  
MAINTAINABILITY DESIGN FEATURES

# CABLING

AA001 A3/DN2G3/P3.1.A1	ARE CABLES LONG ENOUGH TO PERMIT EACH UNIT TO BE CHECKED IN A CONVENIENT PLACE?
AA001+	CAN UNITS IN DRAWERS AND SLIDE OUT RACKS BE PULLED OUT FOR MAINTENANCE WITH OUT BREAKING ELECTRICAL CONNECTIONS?
AA002 A3/DN2G3/P3.1.A2	DOES WIRING ROUTED TO MOVING PARTS PERMIT EASY MOVEMENT WITHOUT STRESS?
AA002+	ARE SERVICE LOOPS PROVIDED ON CABLES TO PERMIT MOVEMENT OF SLIDING CHASSIS OR HINGED DOORS?
AA025 11/174/P11	DO CABLE LENGTHS PERMIT MOVING OR ROTATING UNITS TO MORE CONVENIENT POSITION FOR CONNECTING AND DISCONNECTING?
AA025+	DO METHODS OF ATTACHING CABLES TO UNITS THAT ARE ON SLIDING RACKS PRECLUDE DAMAGE WHEN THE UNIT IS EXTENDED?
AA033 A1/8-11/F8-5.15	CAN CABLE CONNECTORS BE EASILY REACHED FOR REPLACEMENT OR REPAIR?
AA033+	ARE CABLE HARNESSSES DESIGNED TO BE BUILT AND INSTALLED AS A PACKAGE?
AA036 C1/23-25/T23-3.2	ARE PREFORMED CABLES USED WHERE POSSIBLE?
AA036+	DO CABLES IN JUNCTION BOXES FAN-OUT FOR EASE OF CHECKING AND TROUBLE-SHOOTING, AND ARE THEY CLEARLY IDENTIFIED?
AA036+	DO LEADS FAN-OUT TO PROVIDE WORKSPACE AND PREVENT MISCONNECTION?
AA039 C1/23-25/T23-3.8	ARE CABLE COLOR CODES SELECTED TO PRECLUDE CONFUSION DUE TO LACK OF CONTRAST OR POOR ILLUMINATION?
AA039+	ARE ALL CABLES COLOR CODED AND BOTH ENDS TAGGED?
AA003 A3/DN2G3/P3.1.A3	ARE CABLES ROUTED SO THAT THEY NEED NOT BE REPEATEDLY BENT OR TWISTED DURING MAINTENANCE?
AA003+	ARE CABLES ROUTED SO THAT THEY ARE READILY ACCESSIBLE TO THE TECHNICIAN?
AA004 A3/DN2G3/P3.1.C	ARE INPUT/OUTPUT CABLES TO UNITS TERMINATED ON OTHER THAN CONTROL OR DISPLAY SURFACES OF CABINETS?
AA004+	DO TEST CABLE RUNS AVOID INTERFERING WITH CONTROLS AND DISPLAYS?
AA032 A1/8-11/F8-5.5	ARE CABLES DESIGNED AND ROUTED TO AVOID SOLDERING IRON BURNS DURING MAINTENANCE?
AA005 A3/DN2G3/P3.1.D	HAS ADEQUATE SPACE BEEN ALLOWED FOR HARNESSSES AND FOR BREAKOUTS TO CONNECTORS?
AA005+	ARE HEAVY WIRES BROUGHT TO LARGE ENOUGH TERMINALS?
AA029 11/174/P20	ARE CABLES/WIRES ROUTED TO AVOID LYING ACROSS REMOVABLE UNITS OR ACROSS FASTENERS?
AA029+	ARE CABLES RUN SO AS TO PREVENT THEIR COMING IN CONTACT WITH MOVABLE PARTS?
AA037 C1/23-25/T23-3.4	ARE CABLES ROUTED TO PRECLUDE PINCHING BY DOORS, COVERS, LATCHES, ETC.?
AA037+	ARE WIRES WITHIN CABLES TRACEABLE BY POSITION/COLOR ?
AA037+	IS WIRING CODED, TAGGED, LABELED, ETC. WITH THE TYPE AND SOURCE OF SIGNAL?
AA038 C1/23-25/T23-3.4	ARE CABLES AND WIRING STANDARDIZED IN TYPE, SIZE AND FIXTURES?
AA006 A3/DN2G3/P3.2.A	IS WIRING PROTECTED IN RACEWAYS, STUFFING TUBES, AND CONDUIT?
AA006+	IS WIRING SECURED BY QUICK RELEASE, NON-CONDUCTIVE CLAMPS OR PLATES?
AA007 A3/DN2G3/P3.2.A	IS WIRING SUPPORTED AT BOTH ENDS OF BENDS?
AA007+	DOES WIRE/CABLE ROUTING PRECLUDE BLOCKING ACCESS OR OTHERWISE INTERFERING WITH MAINTENANCE?
AA008 L6/26/P10	IS WIRING ROUTED TO FACILITATE TRACING AND REPAIR?
AA008+	IS WIRING ROUTED SO THAT IT WILL BEAR MINIMUM LOAD
AA009 L6/26/P11	
AA009+	
AA010 L4/5-50	
AA010+	
AA011 L4/5-50	
AA011+	
AA012 L4/5-50	
AA013 L4/5-50	
AA013+	
AA014 L4/5-50	
AA014+	
AA016 L4/5-46	
AA016+	
AA017 11/174/P2	
AA017+	
AA027 11/174/P14	
AA027+	
AA018 11/174/P3	
AA018+	
AA019 11/174/P4	
AA019+	
AA020 11/174/P5	
AA020+	
AA021 11/174/P6	
AA022 11/174/P7	
AA022+	
AA023 11/174/P9	
AA024 11/174/P10	

AA024+  
 AA025 11/174/P11  
 AA025+  
 AA026 11/174/P12  
 AA026+  
 AA028 11/174/P17  
 AA028+  
 AA031 A1/8-11/F8-5.3  
 AA031+  
 AA034 A1/8-11/F8-5.16  
 AA034+  
 AA035 A1/8-11/F8-5.18  
 AA041 C1/23-25/T23-3.10  
 AA041+  
 AA042 C1/23-25/T23-3.11  
 AA042+  
 AA042+  
 AA043 C1/23-25/T23-3.12  
 AA043+

AND WILL DISCONNECT BEFORE BREAKING?  
 DOES WIRING ROUTED TO MOVING PARTS PERMIT  
 EASY MOVEMENT WITHOUT STRESS?  
 DO WIRING LENGTHS PERMIT CONVENIENT TESTING OR  
 REMOVAL OF UNITS?  
 ARE REQUIRED EXTENSION CABLES PROVIDED, ALONG WITH  
 ADEQUATE STORAGE SPACE?  
 ARE CABLES FOR INSTALLATION OF A GIVEN TYPE OF  
 EQUIPMENT THE SAME LENGTH?  
 IS A SIMPLE MEANS PROVIDED FOR STORING CABLES USED  
 IN SERVICE AND TEST EQUIPMENT?  
 ARE CABLE ENTRANCES ON FRONT OF CABINETS AVOIDED?  
 IS ELECTRICAL WIRING ROUTED AWAY FROM ALL LINES  
 THAT CARRY FLAMMABLE FLUIDS OR OXYGEN?  
 DOES THE CABLE CONDUIT DESIGN PRECLUDE THE  
 COLLECTION OF WATER OR DERRIS WHICH COULD CAUSE  
 MALFUNCTIONING OF UNITS?  
 IS DIRECT ROUTING OF CABLES/WIRES THROUGH  
 CONGESTED AREAS AVOIDED WHEN POSSIBLE?

#### CONNECTORS

AB044 A3/DN2G3/P2.1.3.D  
 AB044+  
 AB044+  
 AB045 A3/DN2G3/P2.1.3.E  
 AB045+  
 AB045+  
 AB047 A3/DN2G3/P2.1.3.B  
 AB042+  
 AB042+  
 AB019 C1/23-26/T23-3.19  
 AB019+  
 AB032 A3/DN2G3/P3.3.F  
 AB032+  
 AB032+  
 AB031 A3/DN2G3/P3.3.E  
 AB031+  
 AB028 A3/DN2G3/P3.3.A  
 AB028+  
 AB005 C1/23-25/T23-3.5  
 AB005+  
 AB038 A3/DN2G3/P3.4.C  
 AB038+  
 AB007 C1/23-25/T23-3.6  
 AB007+  
 AB007+  
 AB030 A3/DN2G3/P3.3.D  
 AB030+  
 AB030+  
 AB033 A3/DN2G3/P3.3.G  
 AB033+  
 AB033+  
 AB010 C1/23-26/T23-3.10  
 AB010+  
 AB029 A3/DN2G3/P3.3.B  
 AB029+  
 AB029+  
 AB012 C1/23-26/T23-3.12  
 AB012+  
 AB012+  
 AB059 L6/27/P8  
 AB059+  
 AB013 C1/23-26/T23-3.13  
 AB013+  
 AB014 C1/23-26/T23-3.14  
 AB014+  
 AB043 A3/DN2G3/P2.1.3.C

DO TERMINALS TO WHICH WIRES ARE TO BE SOLDERED HAVE  
 ADEQUATE SEPARATION SO THAT WORK ON ONE TERMINAL DOES  
 NOT DAMAGE THOSE NEARBY?  
 ARE TERMINALS OR OTHER CONNECTIONS TO WHICH WIRES ARE  
 TO BE SOLDERED DESIGNED LONG ENOUGH TO PRECLUDE  
 DAMAGE BY THE SOLDERING IRON?  
 HAVE THE ENDS OF WIRES SOLDERED TO TERMINALS BEEN  
 LEFT OUT OF THE SOLDER SO THAT THEY ARE EASY TO  
 REMOVE?  
 CAN WIRES BE UNSOLDERED AND REMOVED WITHOUT DAMAGING  
 LUGS?  
 ARE PLUGS USED IN WHICH THE ALIGNING PINS OR KEYS  
 EXTEND BEYOND THE ELECTRICAL PINS TO PROTECT THE  
 ELECTRICAL PINS FROM DAMAGE?  
 ARE PLUGS WITH SELF LOCKING SAFETY CATCHES USED IN  
 PREFERENCE TO PLUGS THAT MUST BE SAFETY WIRED?  
 ARE PLUGS AND MATCHING RECEPTACLES USED THAT PRECLUDE  
 CONNECTING THE TWO INCORRECTLY?  
 IS THE USE OF SPECIAL ADAPTERS FOR THE SAKE OF  
 STANDARDIZATION AVOIDED SINCE THESE ARE OFTEN LOST?  
 ARE CONNECTORS USED IN WHICH ELECTRICAL CONTACTS  
 CANNOT BE SHORTED BY EXTERNAL OBJECTS?  
 ARE ADEQUATE COVERS PROVIDED ON ELECTRICAL CONNECTORS  
 TO PREVENT FOREIGN MATTER FROM SHORTING OUT THE  
 CONNECTOR?  
 ARE QUICK DISCONNECT PLUGS OR PLUGS THAT CAN BE  
 DISCONNECTED WITH NO MORE THAN ONE TURN USED RATHER  
 THAN PLUGS WITH FINE THREADS THAT REQUIRE MANY TURNS?  
 ARE SYMMETRICAL ARRANGEMENTS OF ALIGNING PINS OR KEYS  
 AVOIDED TO PREVENT INSERTION OF PLUGS 180 DEGREES  
 FROM THE CORRECT POSITION?  
 ARE ELECTRICAL TERMINALS PLAINLY MARKED + OR - SINCE  
 THE CAPS WHICH ARE USUALLY MARKED MAY BE LOST?  
 ARE PAINTED STRIPES, ARROWS, OR OTHER INDICATIONS USED  
 ON PLUGS AND RECEPTACLES TO SHOW THE PROPER POSITION  
 OF KEYS AND ALIGNING PINS FOR PROPER INSERTION?  
 IS THE USE OF IDENTICAL FITTINGS AVOIDED BY  
 STAGGERING LOCATION, VARYING LENGTHS, SIZE OR SHAPE, OR  
 BY SYMBOL OR COLOR CODING?  
 ARE CONNECTING PLUGS AND RECEPTACLES IDENTIFIED BY  
 COLOR, SHAPE, OR OTHER ACCEPTABLE MEANS?  
 ON CABLE CONNECTED REMOVABLE UNITS, WILL PLUG AND  
 RECEPTACLE DISCONNECT BEFORE THE CABLE BREAKS?  
 ARE CONNECTORS LOCATED FOR EASY ACCESSIBILITY FOR  
 REPAIR OR REPLACEMENT?  
 ARE U-LUGS USED RATHER THAN O-LUGS WHENEVER

AB043+	PRACTICABLE?
AB047 L1/78/P4,C	ARE CONNECTORS SELECTED TO PRECLUDE THE USE OF SPECIAL TOOLS?
AB047+	ARE CONNECTORS FOR AUXILIARY EQUIPMENT USED THAT DO NOT REQUIRE TOOLS FOR THEIR OPERATION?
AB016 C1/23-26/T23-3.16	DO CONNECTORS REQUIRE NO MORE THAN ONE FULL TURN TO CONNECT TEST EQUIPMENT TO A TEST POINT?
AB016+	IF TOOLS MUST BE USED TO OPERATE CONNECTORS, ARE ONLY STANDARD TOOLS REQUIRED?
AB018 C1/23-26/T23-3.18	ARE CONNECTORS DESIGNED WITH SURFACES WHICH WILL NOT GOUGE OR BE GOUGED DURING MATING?
AB018+	ARE CONNECTORS DESIGNED TO PERMIT FOOLPROOF ALIGNMENT UNDER FIELD CONDITIONS WITHOUT PIN BENDING?
AB017 C1/23-26/T23-3.17	ARE PLUGS AND RECEPTACLES ARRANGED SO THAT THE ALIGNMENT PINS ARE ORIENTED IN THE SAME DIRECTION THROUGHOUT THE SYSTEM?
AB017+	ARE CONNECTORS DESIGNED TO TRANSMIT AND MAINTAIN ADEQUATE FORCE TO CONTACT SURFACES?
AB020 A2/DN4E3/P1.4	ARE CONNECTORS DESIGNED TO PREVENT ENTRY OF MOISTURE, FUMES, CONTAMINANTS, AND FOREIGN OBJECTS?
AB020+	DOES ADEQUATE CONTACT FLOATING EXIST TO PERMIT INSERTION WITHOUT BINDING?
AB021 A2/DN4E3/P1.5	ARE GUIDE PINS PROPERLY PLACED TO REDUCE BENDING, GOUGING, AND ABRASION DUE TO MISALIGNMENT?
AB021+	ARE PLUGS OR RECEPTACLES PROVIDED WITH ALIGNMENT PINS OR OTHER ALIGNMENT DEVICES?
AB058 L6/27/P7	DOES ADEQUATE WORKSPACE AND TOOL CLEARANCE SURROUND EACH CONNECTOR?
AB058+	ARE PLUGS AND RECEPTACLES USED FOR CONNECTING CABLES TO EQUIPMENT UNITS, RATHER THAN "PIGTAILING" TO TERMINAL BLOCKS?
AB022 A2/DN4E3/P 1.6	ARE PLUGS WITH INTEGRAL TEST POINTS USED FOR EACH INPUT AND OUTPUT THAT CANNOT OTHERWISE BE EASILY CHECKED?
AB022+	IS THE REAR OF THE PLUG ACCESSIBLE FOR TESTING WHERE PRACTICABLE?
AB027 A2/DN4E3/P2.9	ARE "HOT" RECEPTACLES AND "COLD" PLUGS USED?
AB027+	ARE PLUG IN CONTACTS IN PREFERENCE TO SCREW TERMINALS RATHER THAN SOLDER CONNECTIONS USED?
AB024 A2/DN4E3/P2.4	ARE SPARE TERMINALS ON TERMINAL STRIPS AND CONNECTORS PROVIDED?
AB025 A2/DN4E3/P2.5	IS EACH PIN ON EACH PLUG IDENTIFIED?
AB025+	ARE PLUG IN BOARDS KEYED TO PREVENT IMPROPER INSERTION?
AB055 L6/27/P4	ARE REAR OF PLUG CONNECTORS ACCESSIBLE FOR TEST AND SERVICE, EXCEPT WHERE POTTING, SEALING OR OTHER CONSIDERATIONS PRECLUDE THIS?
AB055+	ARE CONTACT PINS LARGE ENOUGH TO RESIST BEING BENT ON INSERTION AND WITHDRAWAL OF THE CONNECTOR?
AB078 I1/155/P5	ARE PROTECTIVE COVERS PROVIDED FOR CONNECTORS WHEN THEY ARE DISCONNECTED?
AB078+	ARE PLUGS THAT ARE ENCLOSED IN METAL COVERS USED WHEN PRACTICABLE?
AB048 L1/97/P37	ARE CONNECTORS PROVIDED WHENEVER EQUIPMENT SEPARATION IS LIKELY?
AB048+	ARE CONNECTORS VISIBLE, REACHABLE, AND OPERABLE WITHOUT DISASSEMBLY?
AB036 A3/DN2G3/P3.4,A	ARE CONNECTORS OPERABLE BY HAND AND REPLACEABLE WITH COMMON TOOLS?
AB036+	CAN EACH CONNECTOR BE REMOVED WITHOUT DISTURBING OTHERS?
AB036+	ARE CONNECTOR MOUNTING POINTS SUPPORTED AGAINST BREAKAGE?
AB080 I1/155/P8	ARE ALL RECEPTACLES, TERMINAL BOARDS, ETC. READILY REPLACEABLE?
AB080+	ARE EXTRA CONNECTORS, PINS, RECEPTACLES PROVIDED AS
AB039 A3/DN2G3/P3.4,0	
AB041 A3/DN2G3/P2.1.3,A	
AB041+	
AB071 A1/8-12/F8-6.10	
AB071+	
AB044 A1/8-12/F8-6.3	
AB051 L1/97/P42	
AB051+	
AB054 L6/27/P3	
AB054+	
AB054+	
AB072 A1/8-12/F8-6.12	
AB072+	
AB073 A1/8-12/F8-6.13	
AB073+	
AB074 A1/8-12/F8-6.15	
AB074+	
AB075 I1/155/P1	
AB075+	
AB076 I1/155/P3	
AB076+	
AB077 I1/155/P4	
AB077+	
AB079 I1/155/P7	
AB079+	
AB083 I1/155/P13	
AB083+	
AB084 I1/155/P16	
AB084+	
AB085 I1/155/P17	



AB085+  
AB087 11/155/P 20  
AB087+

APPROPRIATE?  
ARE CONNECTORS LABELED/CODED ACCORDING TO FUNCTION,  
CIRCUIT ETC?

#### FASTENERS

AC001 A3/DN2G3/P2.4.2.A  
AC024 C1/21-12/T21-1.6  
AC024+  
AC033 C1/21-13/T21-1.15  
AC033+  
AC034 C1/21-13/T21-1.16  
AC002 A3/DN2G3/P2.4.2.B  
AC002+  
AC009 L6/28/PJ.2  
AC009+  
AC004 A3/DN2G3/F2.4.2D  
AC004+  
AC004+  
AC005 A3/DN2G3/P2.4.2.E  
AC005+  
AC059 11/160/13  
AC059+  
AC006 A3/DN2G3/P2.4.2.F  
AC006+  
AC041 C1/21-13/T21-1.23  
AC054 11/160/P7  
AC054+  
AC042 C1/21-13/T21-1.24  
AC042+  
AC055 11/160/P8  
AC008 A3/DN2G3/P2.4.2.H  
AC008+  
AC008+  
AC026 C1/21-12/T21-1.8  
AC026+  
AC071 L1/80/P13.H  
AC071+  
AC011 L6/28/PJ.6  
AC011+  
AC011+  
AC011+  
AC070 11/160/25  
AC070+  
AC073 A3/DN2G3/2.1.2.B  
AC073+  
AC072 L1/99/P13  
AC072+  
AC040 C1/21-13/T21-1.22  
AC021 C1/21-12/T21-1.3  
AC021+  
AC023 C1/21-12/T21-1.5  
AC023+  
AC016 A2/DN2D1/P1.5  
AC016+  
AC016+  
AC016+  
AC016+  
AC025 C1/21-12/T21-1.7  
AC025+  
AC045 C1/21-13/T21-1.27  
AC045+  
AC018 L4/5-49  
AC061 11/160/15  
AC064 11/160/19  
AC060 11/160/14  
AC060+  
AC056 11/160/P9  
AC056+

ARE CAPTIVE FASTENERS USED WHENEVER FEASIBLE?  
ARE MOUNTING BOLTS DESIGNED TO BE SEMI-PERMANENTLY  
CAPTIVE (WITH SNAP-ON COLLARS)?  
WHEN TOOL DRIVEN SCREWS MUST BE USED, CAN THEY BE  
DRIVEN BY MORE THAN ONE TYPE OF STANDARD TOOL?  
ARE ACCESS COVER FASTENERS OF THE CAPTIVE TYPE?  
IS MAXIMUM USE MADE OF TONGUE AND SLOT FEATURES TO  
MINIMIZE THE NUMBER OF FASTENERS REQUIRED?  
ARE THE NUMBER AND DIVERSITY OF FASTENERS MINIMIZED  
COMMENSURATE WITH STRUCTURAL REQUIREMENTS?  
ARE FASTENERS LOCATED SO THAT THEY CAN BE REACHED  
EASILY FROM CONVENIENT WORKING POSITIONS WHEN THE  
UNIT IS IN ITS NORMAL, INSTALLED POSITION?  
ARE FASTENERS ON COVERS OPERABLE EITHER MANUALLY OR  
WITH STANDARD HAND TOOLS?  
IS REPLACEMENT OF STRIPPED, WORN OR DAMAGED FASTENERS  
POSSIBLE?  
ARE FASTENERS USED WHICH REQUIRE ONLY PART OF A  
TURN OR A SNAP ACTION TO FASTEN OR UNFASTEN?  
IS MAXIMUM USE MADE OF QUICK RELEASE FASTENERS?  
CAN FASTENERS BE OPERATED WITH ONE HAND, ONE TOOL,  
BY ONE MAN?  
HAVE CLAMPS, FASTENERS, ETC. BEEN SELECTED TO ALLOW  
FASTENING WITH ONE HAND?  
IS THE NUMBER OF TURNS TO REMOVE FASTENERS MINIMAL?  
WHEN PRACTICABLE, ARE THE SAME SIZE AND TYPE OF  
FASTENERS USED FOR ALL COVERS AND CASES ON A GIVEN  
PIECE OF EQUIPMENT?  
IS NO MORE THAN ONE THREAD SIZE PER BOLT SIZE USED  
IN A GIVEN EQUIPMENT?  
DO ALL SET SCREWS WITHIN THE SAME EQUIPMENT HAVE  
THE SAME TYPE AND SIZE HEAD?  
IF COMPATIBLE WITH STRESS AND LOAD CONSIDERATIONS,  
DO FASTENERS FOR MOUNTING ASSEMBLIES, SUBASSEMBLIES,  
ETC. FASTEN OR UNFASTEN WITH A MAXIMUM OF ONE  
COMPLETE TURN?  
ARE HINGES, CATCHES, ETC. USED TO REDUCE THE NUMBER  
OF FASTENERS REQUIRED?  
ARE HAND RATHER THAN TOOL OPERATED FASTENERS USED  
WHENEVER POSSIBLE?  
IS THE USE OF FASTENERS REQUIRING SPECIAL TOOLS  
AVOIDED?  
ARE SPECIAL FASTENERS PROPERLY MARKED OR CODED?  
WHEN TOOL OPERATED FASTENERS ARE REQUIRED, ARE ONLY  
THOSE OPERABLE WITH STANDARD TOOLS USED?  
WHEN HIGH TORQUE IS REQUIRED, ARE EXTERNAL HEX HEAD  
BOLTS USED?  
IS THE USE OF FASTENERS OF THE SAME DIAMETER HAVING  
THE SAME GRIP LENGTH BUT DIFFERENT SHANK LENGTH OR  
THOSE HAVING THE SAME SHANK LENGTH BUT DIFFERENT  
GRIP LENGTH AVOIDED WHERE THEY COULD BE INADVERTENTLY  
INTERCHANGED?  
ARE MOUNTING BOLTS OR FASTENERS IDENTIFIED ACCORDING  
TO DISASSEMBLY INSTRUCTIONS?  
IS THE LENGTH OF THE BOLT ADEQUATE (MINIMUM OF TWO  
THREAD LENGTHS SHOWING)?  
ARE ALL FASTENERS LARGE ENOUGH?  
ARE WINGED NUTS USED IN PREFERENCE TO KNURLED NUTS?  
ARE SAFETY WIRING AND COTTER KEYS AVOIDED?  
ARE COMBINATION HEADS (DEEP SLOT AND HEX) USED TO  
ALLOW ALTERNATE TOOL USE?  
DOES ADEQUATE WORKING AND TOOL CLEARANCE SURROUND  
EACH FASTENER?



AC028 C1/21-12/T21-1.10	ARE ASSEMBLIES AND UNITS DESIGNED TO BE REPLACEABLE BY STANDARD TOOLS?
AC028+	ARE GUIDE PINS ON UNITS AND ASSEMBLIES PROVIDED FOR ALIGNMENT DURING MOUNTING?
AC029 C1/21-12/T21-1.11	ARE U-LUGS RATHER THAN O-LUGS USED FOR CLAMPING PURPOSES?
AC029+	ARE PERMANENTLY ATTACHED NUTS USED WHEREVER FEASIBLE?
AC030 C1/21-12/T21-1.12	ARE TAPPED HOLES AVOIDED?
AC030+	ARE FASTENERS DESIGNED SO THAT CLOSE TORQUE TOLERANCES ARE NOT REQUIRED?
AC032 C1/21-13/T21-1.14	WHERE PRECISE TORQUE OR PRELOAD IS REQUIRED, ARE FASTENERS USED THAT INCORPORATE TORQUE-INDICATING FEATURES?
AC032+	ARE STANDARD SIZE, TYPE AND TORQUE VALUE CODES ETCHED OR EMBOSSED ON FASTENERS?
AC062 11/160/16	ARE FASTENERS OF RUST RESISTANT MATERIAL?
AC035 C1/21-13/T21-1.17	ARE STUDS OR SOFT, RUSTABLE, CLOSE TOLERANCE FASTENERS AVOIDED?
AC035+	ARE MOUNTING HOLES LARGE ENOUGH TO ALLOW INSERTION AND STARTING OF FASTENERS?
AC076 A3/DN2G3/2.1.2.I	ARE BOLTS INSTALLED WITH HEADS UPPERMOST OR IN SUCH DIRECTION THAT THE LOSS OF THE BOLT DUE TO LOSS OF THE NUT IS MINIMIZED?
AC076+	ARE BOLTS INSTALLED WITH THE HEADS FORWARD OR IN A DIRECTION THAT ALLOWS EASY REMOVAL FOR MAINTENANCE?
AC076+	IS SCREW HEAD SHAPE COMPATIBLE WITH THICKNESS OF PANEL?
AC057 11/160/11	IF SELF-LOCKING BOLTS ARE USED, IS OPERATING TEMPERATURE BELOW 250 DEGREES F?
AC057+	ARE RIVETS RESTRICTED TO THOSE ITEMS WHICH ARE PERMANENTLY ATTACHED?
AC037 C1/21-13/T21-1.19	ARE RIVETS AVOIDED ON ANY PART THAT MAY REQUIRE REMOVAL?
AC065 11/160/20	ARE RIVETS SOFTER THAN SURROUNDING METAL?
AC065+	CAN FASTENERS BE REACHED AND REMOVED WITHOUT DISASSEMBLY?
AC038 C1/21-13/T21-1.20	ARE IDENTICAL HEADS USED WHEREVER PRACTICAL TO MINIMIZE TOOLS?
AC038+	DO REGULARLY USED FASTENERS CONTRAST IN COLOR WITH THE SURFACE?
AD005 A2/DN2D1/P3.45	ARE THE TOPS OF MOUNTING BOLTS AND FASTENERS USED FOR MOUNTING EMBOSSED WITH AN "M" OR PAINTED A DISTINCTIVE COLOR TO MAKE THEM EASY TO LOCATE?
AD005+	HAVE SMALL REMOVABLE PARTS BEEN SECURED BY CHAINS TO PREVENT LOSS?
AD005+	DO CHAINS HANG EXTERNALLY SO THAT THEY CAN NOT DROP INTO MOVING PARTS?
AC078 A2/DN2D1/F3.46	ARE CHAINS NO LONGER THAN NECESSARY?
AC078+	IS BEAD-LINK CHAIN AVOIDED?
AC043 C1/21-13/T21-1.25	
AC043+	
AC044 C1/21-13/T21-1.26	
AC044+	
AC046 C1/21-13/T21-1.28	
AC046+	
AC063 11/160/18	
AC063+	
AC047 C1/21-13/T21-1.28	
AC051 11/160/P3	
AC051+	
AC053 11/160/P5	
AC053+	
AC058 11/160/12	
AC058+	
AC074 A3/DN2G3/2.1.2.D	
AC074+	
AC074+	
AC048 C1/21-13/T21-1.29	
AC048+	
AC067 11/160/23	
AC067+	
AC068 11/160/24	
AC069 11/160/24	

#### MISCELLANEOUS FITTINGS

AD001 A2/DN2D3/P1.9	ARE PROVISIONS MADE FOR THE REMOVAL OF TORQUE SHAFTS, IN WHICH UNIVERSAL JOINTS ARE INSTALLED, WITHOUT DISASSEMBLY OR REMOVAL OF PINS FROM THE JOINTS?
AD001+	HAVE ALL FITTINGS BEEN DESIGNED WITH A MINIMUM OF CONSTITUENT PARTS FOR EASE OF ASSEMBLY, DISASSEMBLY, REMOVEABILITY, AND REPLACEABILITY?
AD001+	ARE THREADED HOLES IN FITTINGS AVOIDED BECAUSE OF THE LIMITED SERVICEABILITY OF THE FITTINGS?
AD002 A2/DN2D2/P1.3	WHERE THREADED HOLES IN FITTINGS CANNOT BE AVOIDED HAS THE PART BEEN DESIGNED EITHER WITH INSERTS OR TO PERMIT MACHINING AND RETHRADING?
AD002+	
AD002+	
AD003 A2/DN2D2/P1.20	
AD003+	
AD004 A2/DN2D2/P1.22	
AD004+	
AD004+	

BREAKERS AND FUSES

AE001 11/154/P1  
AE001+  
AE002 11/154/P2  
AE002+  
AE003 11/154/P3  
AE003+  
AE004 11/154/P4  
AE004+  
AE005 11/154/P4  
AE005+  
AE006 11/154/P6  
AE006+  
AE007 11/154/P7  
AE007+  
AE008 11/154/P8  
AE008+  
AE009 11/154/P9  
AE009+  
AE010 11/154/P10  
AE010+  
AE011 11/154/P11  
AE012 11/154/P11  
AE013 11/154/P12  
AE013+  
AE014 11/154/P13  
AE014+

DO FUSES OR CIRCUIT BREAKERS PROTECT BOTH SIDES OF THE LINE?  
ARE FUSES AND CIRCUIT BREAKERS LOCATED AND GROUPED FOR EASY INSPECTION?  
DO FUSES/CIRCUIT BREAKERS POSITIVELY INDICATE WHEN BLOWN/TRIPPED?  
IS THE USE OF CIRCUIT BREAKERS GIVEN PREFERENCE TO THE USE OF FUSES WHEN PRACTICABLE?  
DO BREAKERS AUTOMATICALLY HANDLE MOMENTARY OVERLOADS?  
ARE TRIPPED BREAKERS EASILY DETECTED AND RESET FROM FRONT PANELS?  
ARE BREAKERS THAT SERVE THE SAME FUNCTION, THE SAME SIZE, TYPE, AND SHAPE?  
ARE INSTRUCTIONS FOR CLOSING TRIPPED BREAKERS CLEAR AND STANDARD?  
ARE BREAKERS LABELED WITH FUNCTION AND KEY CHARACTERISTICS?  
ARE FUSES ON FRONT PANELS REPLACEABLE WITHOUT TOOLS?  
ARE FUSES IN INDICATING HOLDERS?  
ARE SPARE FUSES ADJACENT TO ACTIVE FUSES?  
ARE FUSE APPLICATIONS STANDARDIZED IN A FEW DISCRIMINABLE TYPES?  
ARE FUSES WITH REPLACEABLE PARTS USED ONLY IN THE CASE OF ABSOLUTE NECESSITY?

# ACCESSIBILITY

RA001 C1/12-10/T12-5.1  
 RA001+  
 RA001+  
 RA014 C1/12-11/T12-5.31  
 RA014+  
 RA014+  
 RA002 C1/12-10/T12-5.10  
 RA002+  
 RA017 A3/DN2G4/P2.3C  
 RA017+  
 RA017+  
 RA003 C1/12-11/T12-5.14  
 RA003+  
 RA003+  
 RA004 C1/12-11/T12-5.25  
 RA004+  
 RA004+  
 RA005 C1/12-11/T12-5.16  
 RA005+  
 RA005+  
 RA006 C1/12-11/T12-5.17  
 RA006+  
 RA006+  
 RA007 C1/12-11/T12-5.19  
 RA007+  
 RA008 C1/12-11/T12-5.20  
 RA008+  
 RA009 C1/12-11/T12-5.21  
 RA009+  
 RA010 C1/12-11/T12-5.22  
 RA010+  
 RA010+  
 RA011 C1/12-11/T12-5.23  
 RA011+  
 RA012 C1/12-11/T12-5.28  
 RA012+  
 RA012+  
 RA025 L6/22/P21  
 RA025+  
 RA025+  
 RA025+  
 RA025+  
 RA020 A3/DN2G4/P2.4F  
 RA020+  
 RA020+  
 RA013 C1/12-11/T12-5.30  
 RA013+  
 RA013+  
 RA015 A3/DN2G4/P2.3A  
 RA015+  
 RA015+  
 RA016 A3/DN2G4/P2.3B  
 RA016+  
 RA016+  
 RA021 B2/153/P5.9.4.2  
 RA021+  
 RA021+  
 RA018 A3/DN2G4/P2.3D  
 RA018+  
 RA018+  
 RA019 A3/DN2G4/P2.4A  
 RA019+  
 RA019+  
 RA019+

IS OPTIMUM ACCESSIBILITY PROVIDED TO ALL EQUIPMENT REQUIRING MAINTENANCE, INSPECTION, REMOVAL OR REPLACEMENT?  
 ARE ENVIRONMENTAL FACTORS (COLD WEATHER, DARKNESS, ETC.) CONSIDERED IN DESIGN AND LOCATION OF ALL ITEMS OF EQUIPMENT REQUIRING ACCESSABILITY?  
 ARE UNITS PLACED SO THAT STRUCTURAL MEMBERS DO NOT PREVENT ACCESS TO THEM?  
 IS THE LOCATION OF UNITS BEHIND OR UNDER STRUCTURAL MEMBERS, FLOOR BOARDS, SEATS, HOSES, PIPES ETC. AVOIDED EXCEPT WHEN SO POSITIONED FOR PROTECTION?  
 ARE UNITS LAID OUT SO MAINTENANCE TECHNICIANS ARE NOT REQUIRED TO RETRACE THEIR MOVEMENTS DURING EQUIPMENT CHECKING?  
 IS ENOUGH ACCESS ROOM PROVIDED FOR TASKS WHICH NECESSITATE THE INSERTION OF TWO HANDS AND TWO ARMS THROUGH THE ACCESS?  
 DOES THE ACCESS PROVIDE ENOUGH ROOM FOR THE TECHNICIAN'S HANDS OR ARMS AND STILL PROVIDE FOR AN ADEQUATE VIEW OF WHAT HE IS TO DO?  
 ARE IRREGULAR EXTENSIONS, SUCH AS BOLTS, TABLES, WAVE-GUIDES, AND HOSES EASY TO REMOVE BEFORE THE UNIT IS HANDLED?  
 ARE UNITS REMOVABLE FROM THE INSTALLATION ALONG A STRAIGHT OR MODERATELY CURVED LINE?  
 ARE HEAVY UNITS INSTALLED WITHIN NORMAL REACH OF A TECHNICIAN FOR PURPOSES OF REPLACEMENT?  
 ARE PROVISIONS MADE FOR SUPPORT OF UNITS WHILE THEY ARE BEING REMOVED OR INSTALLED?  
 ARE RESTS OR STANDS PROVIDED ON WHICH UNITS CAN BE SET TO PREVENT DAMAGE TO DELICATE PARTS DURING INSTALLATION/REMOVAL?  
 IS SPLIT LINE DESIGN (OPENS LIKE A SUITCASE OR BOOK FOR ACCESS) UTILIZED WHENEVER POSSIBLE?  
 ARE ACCESS OPENINGS FREE OF SHARP EDGES OR PROJECTIONS WHICH COULD INJURE THE TECHNICIAN OR SNAG ON CLOTHING?  
 ARE UNITS LOCATED AND MOUNTED SO THAT ACCESS TO THEM MAY BE ACHIEVED WITHOUT DANGER TO PERSONNEL FROM ELECTRICAL CHARGE, HEAT, SHARP EDGES, POINTS, MOVING PARTS, CHEMICALS AND OTHER CONTAMINANTS?  
 HAVE UNITS BEEN LOCATED TO MINIMIZE THE POSSIBILITY OF OIL, OTHER FLUIDS OR DIRT DROPPING ON THE REPAIRMAN?  
 HAVE HUMAN STRENGTH LIMITS BEEN CONSIDERED IN THE DESIGN OF DEVICES WHICH MUST BE CARRIED, LIFTED, PULLED, PUSHED, AND TURNED?  
 HAS EACH UNIT BEEN POSITIONED IN THE EQUIPMENT SO THAT NO OTHER UNIT OR EQUIPMENT HAS TO BE REMOVED TO GET TO IT?  
 WHEN IT IS NECESSARY TO POSITION UNITS IN TANDEM IS THE UNIT REQUIRING THE MOST FREQUENT SERVICING IN FRONT OF THE UNIT REQUIRING THE LEAST SERVICING?  
 HAVE LARGE DIFFICULT TO REMOVE PARTS BEEN MOUNTED SO THEY WILL NOT PREVENT CONVENIENT ACCESS TO OTHER PARTS?  
 DOES THE REMOVAL OF ANY GIVEN LINE REPLACEABLE UNIT REQUIRE THE OPENING OF ONLY ONE ACCESS?  
 IF TECHNICIANS MUST HAVE ACCESS TO THE BACK OF A HINGE-MOUNTED UNIT, HAS THE UNIT BEEN INSTALLED SO THAT IT WILL OPEN TO ITS FULL DISTANCE AND REMAIN OPEN WITHOUT BEING HELD?

RA022 B2/153/P5.9.4.5  
 RA022+  
 RA022+  
 RA023 L6/20/P1  
 RA023+  
 RA023+  
 RA024 L6/20/P2  
 RA024+  
 RA024+  
 RA024+  
 RA024+

ARE THOSE UNITS WHICH ARE MOST CRITICAL TO SYSTEM OPERATION AND WHICH REQUIRE RAPID MAINTENANCE THE MOST ACCESSIBLE?  
 ARE HINGED DOORS WITH CAPTIVE, QUICK-OPENING FASTENERS PROVIDED FOR ACCESS TO UNITS WHENEVER POSSIBLE?  
 IF A HINGED ACCESS OR QUICK-OPENING FASTENERS DOES NOT MEET STRESS, PRESSURIZATION, SHIELDING OR SAFETY REQUIREMENTS, HAS A COVER WITH THE MINIMUM NUMBER OF THE LARGEST SCREWS CONSISTANT WITH THESE REQUIREMENTS BEEN USED?

#### ACCESSES

RB001 C1/12-10/T12-5.2  
 RB001+  
 RB002 C1/12-10/T12-5.3  
 RB002+  
 RB022 A3/DN2G4/F2.4D  
 RB022+  
 RB022+  
 RB034 L6/21/P13  
 RB034+  
 RB034+  
 RB034+  
 RB003 C1/12-10/T12-5.4  
 RB003+  
 RB003+  
 RB004 C1/12-10/T12-5.5  
 RB004+  
 RB005 C1/12-10/T12-5.6  
 RB005+  
 RB006 C1/12-10/T12-5.7  
 RB006+  
 RB006+  
 RB006+  
 RB007 C1/12-10/T12-5.8  
 RB007+  
 RB007+  
 RB008 C1/12-10/T12-5.9  
 RB008+  
 RB008+  
 RB009 C1/12-10/T12-5.11  
 RB009+  
 RB009+  
 RB010 C1/12-11/T12-5.13  
 RB010+  
 RB011 C1/12-11/T12-5.18  
 RB011+  
 RB011+  
 RB012 C1/12-11/T12-5.24  
 RB012+  
 RB012+  
 RB013 C1/12-11/T12-5.25  
 RB013+  
 RB013+  
 RB014 C1/12-11/T12-5.26  
 RB014+  
 RB014+  
 RB015 C1/12-11/T12-5.27  
 RB015+  
 RB017 C1/12-11/T12-5.29  
 RB017+  
 RB016 C1/12-11/T12-5.29  
 RB016+  
 RB016+  
 RB016+  
 RB018 A3/DN2G1/P5D  
 RB018+

IS A TRANSPARENT WINDOW OR QUICK OPENING METAL COVER USED FOR VISUAL INSPECTION ACCESSES?  
 ARE ACCESS OPENINGS WITHOUT COVERS USED WHERE THIS IS NOT LIKELY TO DEGRADE PERFORMANCE?  
 ARE UNITS THAT REQUIRE FREQUENT VISUAL INSPECTION LOCATED WHERE THEY CAN BE EASILY SEEN WITHOUT THE NEED TO REMOVE PANELS, COVERS, OR OTHER UNITS?  
 WHERE ACCESS IS REQUIRED FOR INSPECTION OR SERVICE AND UNCOVERED OPENINGS OR SEE-THROUGH COVERS DO NOT MEET STRESS OR OTHER REQUIREMENTS, ARE QUICK-OPENING METAL COVERS USED?  
 IS A HINGED DOOR USED WHERE PHYSICAL ACCESS IS REQUIRED WITHIN A UNIT (INSTEAD OF COVER PLATES HELD BY SCREWS OR OTHER FASTENERS)?  
 IF HINGED ACCESS DOORS ARE NOT FEASIBLE, ARE COVER PLATES WITH CAPTIVE QUICK-OPENING FASTENERS USED?  
 IF A SCREW FASTENED ACCESS PLATE IS USED, IS IT HELD BY THE MINIMUM PRACTICABLE NUMBER OF SCREWS?  
 ON HINGED ACCESS DOORS IS THE HINGE PLACED ON THE BOTTOM OR IS A PROP PROVIDED SO THAT THE DOOR WILL STAY OPEN WITHOUT BEING HELD IF UNFASTENED IN A NORMAL INSTALLATION?  
 ARE PARTS LOCATED SO THAT OTHER LARGE PARTS WHICH ARE DIFFICULT TO REMOVE DO NOT PREVENT ACCESS TO THEM?  
 ARE COMPONENTS PLACED SO THAT THERE IS SUFFICIENT SPACE TO USE TEST PROBES, SOLDERING IRONS, AND OTHER REQUIRED TOOLS WITHOUT DIFFICULTY?  
 ARE COMPONENTS PLACED SO THAT IT IS NOT NECESSARY TO REMOVE ANY ASSEMBLY FROM A MAJOR COMPONENT TO TROUBLESHOOT TO THAT ASSEMBLY?  
 CAN SCREWDRIVER OPERATED CONTROLS BE ADJUSTED WITH THE HANDLE CLEAR OF ANY OBSTRUCTION?  
 ARE ACCESS DOORS MADE IN WHATEVER SHAPE IS NECESSARY TO PERMIT PASSAGE OF COMPONENTS AND IMPLEMENTS WHICH MUST PASS THROUGH?  
 ARE ACCESS POINTS INDIVIDUALLY LABELED SO THEY CAN BE EASILY IDENTIFIED WITH NOMENCLATURE IN THE JOB INSTRUCTIONS AND MAINTENANCE MANUALS?  
 ARE ACCESSES LABELED TO INDICATE WHAT CAN BE REACHED THROUGH THIS POINT (LABEL ON COVER OR CLOSE THERETO)?  
 ARE ACCESSES LABELED TO INDICATE WHAT AUXILIARY EQUIPMENT IS NEEDED FOR SERVICE, CHECKING, ETC. AT THIS POINT?  
 ARE ACCESSES LABELED TO SPECIFY THE FREQUENCY FOR MAINTENANCE EITHER BY CALENDAR OR OPERATING TIME?  
 ARE REQUIREMENTS FOR DOUBLE ACCESS OPENINGS TO PERFORM SERVICING FUNCTIONS AVOIDED WHEN POSSIBLE?  
 ARE PARTS WHICH REQUIRE ACCESS FROM TWO OR MORE OPENINGS MARKED TO SO INDICATE IN ORDER TO AVOID DELAY OR DAMAGE BY TRYING TO REPAIR OR REMOVE THROUGH ONLY ONE ACCESS?  
 HAS EQUIPMENT BEEN DESIGNED SO THAT IT CAN BE SERVICED WHERE IT IS FINALLY INSTALLED?



RB019 A3/DN2G4/P2.3E  
 RB019+  
 RB020 A3/DN2G4/P2.4H  
 RB020+  
 RB020+  
 RB021 A3/DN2G4/F2.4C  
 RB021+  
 RB021+  
 RB023 A3/DN2G4/F2.4E  
 RB023+  
 RB023+  
 RB024 B2/153/P5.9.4.3  
 RB024+  
 RB024+  
 RB025 B2/153/P5.9.4.3  
 RB025+  
 RB025+  
 RB046 L4/5-45  
 RB046+  
 RB027 L6/23/PG1  
 RB027+  
 RB027+  
 RB028 L6/20/P5  
 RB028+  
 RB028+  
 RB029 L6/20/P6  
 RB029+  
 RB029+  
 RB029+  
 RB030 L6/21/P9  
 RB030+  
 RB030+  
 RB030+  
 RB032 L6/21/P11  
 RB032+  
 RB032+  
 RB033 L6/21/P12  
 RB033+  
 RB033+  
 RB033+  
 RB035 L6/22/P20  
 RB035+  
 RB035+  
 RB035+  
 RB035+  
 RB036 A2/DN2A1/P1.2  
 RB036+  
 RB036+  
 RB036+  
 RB038 A2/DN2G2/P1.29  
 RB038+  
 RB039 A2/DN2G2/P1.30  
 RB039+  
 RB040 L4/5-56  
 RB040+  
 RB042 L4/5-50  
 RB042+  
 RB043 L4/5-50  
 RB043+  
 RB044 L4/5-48  
 RB044+  
 RB045 L4/5-46  
 RB045+  
 RB045+

HAS EQUIPMENT BEEN DESIGNED SO THAT UNITS ARE  
 REMOVABLE FROM THE FRONT RATHER THAN THE BACK?  
 ARE UNITS LOCATED SO THAT THEIR COVERS CAN BE  
 OPENED WITHOUT INTERFERENCE FROM BULKHEADS, BRACKETS  
 OR OTHER EQUIPMENT?  
 ARE UNITS LOCATED SO THAT CHECK POINTS, ADJUSTMENT  
 POINTS, CONNECTORS AND LABELS FACE THE TECHNICIAN  
 AND ARE NOT HIDDEN BY OTHER UNITS?  
 ARE UNITS THAT MUST BE CHECKED IN SUCCESSIVE STEPS  
 ALL LOCATED TOGETHER TO MINIMIZE THE TECHNICIANS  
 MOVEMENTS?  
 ARE CHECK POINTS, ADJUSTMENT POINTS, TEST POINTS  
 CABLES, CONNECTORS, AND LABELS ACCESSIBLE AND VISIBLE  
 DURING MAINTENANCE?  
 HAS SUFFICIENT SPACE BEEN PROVIDED FOR THE USE OF  
 TEST EQUIPMENT AND OTHER TOOLS WITHOUT DIFFICULTY  
 OR HAZARD?  
 ARE THE COMPONENTS WITH THE HIGHEST FAILURE RATES  
 READILY ACCESSIBLE FOR REPLACEMENT?  
 ARE OPENINGS AND WORK SPACES THAT ARE PROVIDED FOR  
 ADJUSTING AND HANDLING UNITS LARGE ENOUGH TO PERMIT  
 THE REQUIRED ACTIVITY?  
 IF INSTRUCTIONS APPLYING TO A COVERED UNIT ARE  
 LETTERED ON A HINGED DOOR, IS THE LETTERING PROPERLY  
 ORIENTED FOR READING WHEN THE DOOR IS OPEN?  
 ARE SLIDING, ROTATING OR HINGED UNITS TO WHICH REAR  
 ACCESS IS REQUIRED FREE TO OPEN OR ROTATE THEIR  
 FULL DISTANCE AND REMAIN IN THE OPEN POSITION WITH-  
 OUT BEING SUPPORTED BY HAND?  
 FOR UNITS THAT ARE NOT COMPLETELY SELF CHECKING  
 HAVE PROVISIONS BEEN MADE FOR CHECKING THE OPERA-  
 TION OF THE UNIT IN THE INSTALLED POSITION WITHOUT  
 THE USE OF SPECIAL RIGS AND HARNESSSES?  
 WHERE VISUAL ACCESS ONLY IS REQUIRED, IS A PLASTIC  
 WINDOW USED IF DIRT, MOISTURE OR OTHER FOREIGN MAT-  
 ERIAL PRESENTS A PROBLEM?  
 IS A BREAK RESISTANT GLASS WINDOW USED FOR VISUAL  
 ACCESS IF PHYSICAL WEAR, HEAT OR CONTACT WITH SOL-  
 VENTS WILL CAUSE OPTICAL DETERIORATION OF OTHER  
 TYPES OF SEE-THROUGH COVERS?  
 WHEN EQUIPMENT IS OF A HIGHLY CRITICAL NATURE AND  
 MAINTENANCE REQUIRES HIGHLY SPECIALIZED SKILLS, IS  
 THE ACCESS TO UNITS MAINTAINED BY ONE OPERATOR  
 INDEPENDENT OF A REQUIREMENT FOR THE REMOVAL OF  
 EQUIPMENT MAINTAINED BY A SECOND OPERATOR?  
 HAVE SYSTEMS BEEN DESIGNED TO PERMIT MAXIMUM ACCESS  
 IBILITY FOR TESTING, FAULT DETECTION, REPAIRING AND  
 REPLACING COMPONENTS WITHOUT INTERFERING WITH OTHER  
 COMPONENTS OR ASSEMBLIES?  
 CAN SURFACES BE INSPECTED BY PENETRANT TECHNIQUES  
 FOR THE PRESENCE OF SURFACE CRACKS AND VOIDS?  
 CAN WELDED JOINTS BE INSPECTED BY RADIOGRAPHIC TECH-  
 NIQUE FOR THE PRESENCE OF INTERNAL DEFECTS?  
 CAN ASSEMBLIES BE LAID ON A BENCH IN ANY POSITION  
 WITHOUT DAMAGING COMPONENTS?  
 ARE ALL TEST POINTS ACCESSIBLE WHEN THE UNIT IS  
 PROPERLY INSTALLED?  
 ARE ALL FIELD ADJUSTMENTS ACCESSIBLE WHEN THE UNIT  
 IS PROPERLY INSTALLED?  
 ARE ALL ITEMS VISUALLY AND PHYSICALLY ACCESSIBLE  
 WHEN THE UNIT IS ON THE TEST STAND?  
 IS ACCESS TO CONTROLS SUCH THAT THEY CAN BE SEEN  
 AND OPERATED WITHOUT DISASSEMBLY OR REMOVAL OF ANY  
 PART OF THE INSTALLATION?

CONTROLS-GENERAL CRITERIA

CA101 B2/59/P5.4.1.1	HAVE CONTROLS BEEN SELECTED SO THAT NONE OF THE
CA101+	OPERATOR'S LIMBS WILL BE OVERBURDENED?
CA102 B2/59/P5.4.1.1	HAS OPERATION UNDER VARIABLE G-LOADING BEEN CONSID-
CA102+	FRED IN THE SELECTION OF CONTROLS?
CA103 B2/59/P5.4.1.1	ARE MULTIROTATIONAL CONTROLS USED WHENEVER THE OPERATIONAL MODE
CA103+	REQUIRES PRECISION IN CONTROL OPERATION OVER THE ADJUSTMENT RANGE?
CA104 B2/59/P5.4.1.1	ARE DETENT CONTROLS USED WHENEVER THE OPERATIONAL
CA104+	MODE REQUIRES CONTROL OPERATION IN DISCRETE STEPS?
CA105 C1/9-29/T9-11.11	EXCEPT FOR DETENTS OR SELECTOR SWITCHES, ARE CONT-
CA105+	ROLS USED WHICH HAVE SMOOTH, EVEN RESISTANCE TO MOVE
CA105+	MENT?
CA106 C1/9-29/T9-11.12	ARE SELECTOR SWITCHES USED WHICH HAVE SUFFICIENT
CA106+	SPRING LOADING TO PREVENT INDEXING BETWEEN DETENTS?
CA107 A3/DN2G3/P7	ARE CONTROLS PROVIDED FOR THE MAINTENANCE TECHNI-
CA107+	CIAN WHENEVER THE OPERATOR'S CONTROLS CANNOT PUT
CA107+	INTO THE SYSTEM INFORMATION THAT IS CALLED FOR BY
CA107+	MAINTENANCE PROCEDURES?
CA108 A3/DN2G3/P7.1.A	ARE HAND OPERATED, RATHER THAN TOOL OPERATED CONT-
CA108+	ROLS USED WHEN FREQUENT ADJUSTMENT MUST BE MADE?
CA109 A3/DN2G3/P7.1.B	ARE BAR-SHAPED POINTERS USED WITH SELECTOR SWITCHES
CA110 A3/DN2G3/P7.1.C/D	ARE ROUND KNOBS WITH ORIENTING DOT, TRIANGLE OR BAR
CA110+	USED FOR CONTINUOUS ROTATION FOR A FEW TURNS, AND
CA110+	ROUND KNOB WITH FOLDING OR HINGED CRANK USED FOR
CA110+	MANY TURNS?
CA201 B2/59/P5.4.1.2	IS THE DIRECTION OF MOVEMENT OF CONTROLS CONSISTENT
CA201+	WITH THE RELATED MOVEMENT OF AN ASSOCIATED DISPLAY
CA201+	EQUIPMENT COMPONENT OR VEHICLE?
CA202 B2/59/P5.4.1.2	WHEN SEVERAL CONTROLS ARE COMBINED IN ONE CONTROL
CA202+	DEVICE, IS CONSISTENCY OF ANTICIPATED RESPONSE MAIN-
CA202+	TAINED?
CA203 B2/59/P5.4.1.2	ARE CONTROLS ORIENTED WITH RESPECT TO THE OPERATOR?
CA204 B2/59/P5.4.1.2	DO ROTARY VALVE CONTROLS OPEN THE VALVE WITH A
CA204+	COUNTERCLOCKWISE MOTION?
CA301 B2/60/P5.4.1.3	ARE ALL CONTROLS WHICH HAVE SEQUENTIAL RELATIONS OR
CA301+	WHICH OPERATE TOGETHER, GROUPED TOGETHER ALONG WITH
CA301+	THEIR ASSOCIATED DISPLAYS?
CA302 B2/60/P5.4.1.3	WHERE SEQUENTIAL OPERATIONS FOLLOW A FIXED PATTERN,
CA302+	ARE CONTROLS ARRANGED TO FACILITATE OPERATION (E.G.,
CA302+	IN A PATTERN LEFT TO RIGHT, TOP TO BOTTOM)?
CA303 B2/60/P5.4.1.3	DO THE MOST IMPORTANT AND FREQUENTLY USED CONTROLS
CA303+	HAVE THE MOST FAVORABLE POSITION WITH RESPECT TO
CA303+	EASE OF REACHING AND GRASPING?
CA304 B2/60/P5.4.1.3	IS THE ARRANGEMENT OF FUNCTIONALLY SIMILAR, OR IDENT-
CA304+	TICAL PRIMARY CONTROLS CONSISTENT FROM PANEL TO
CA304+	PANEL THROUGHOUT THE SYSTEM, EQUIPMENT, UNIT, OR VEH-
CA304+	ICLE?
CA305 B2/60/P5.4.1.3	IS DIRECTION OF MOVEMENT CONSISTENCY MAINTAINED FOR
CA305+	REMOTE CONTROL OPERATED DISPLAYS OR DEVICES?
CA306 B2/60/P5.4.1.3	ARE CONTROLS THAT ARE USED SOLELY FOR MAINTENANCE
CA306+	AND ADJUSTMENT, AND REFERRED TO INFREQUENTLY, COVERED
CA306+	DURING NORMAL OPERATION BUT READILY ACCESSIBLE AND
CA306+	VISIBLE TO THE MAINTENANCE TECHNICIAN?
CA307 C1/9-29/T9-11.1	ARE ALL ADJUSTMENTS FOR A GIVEN SUBSYSTEM LOCATED
CA307+	ON A SINGLE PANEL?
CA308 C1/9-29/T9-11.2	ARE CONTROLS LOCATED WHERE THEY CAN BE SEEN AND OP-
CA308+	ERATED WITHOUT DISASSEMBLY OR REMOVAL OF ANY PART
CA308+	OF THE INSTALLATION?
CA310 C1/9-29/T9-11.4	ARE CONTROLS PLACED ON PANEL IN THE ORDER IN WHICH
CA310+	THEY WILL NORMALLY BE USED?
CA311 A3/DN2G3/P7.2A	FOR EQUIPMENTS THAT HAVE CONTROLS FOR MAINTENANCE
CA311+	AS WELL AS FOR OPERATION, ARE THE MAINTENANCE CONT-
CA311+	ROLS PLACED ON THE FRONT PANEL BEHIND AN ACCESS
CA311+	DOOR SO THAT THE OPERATOR'S CONTROLS ARE ALSO



CA311+  
CA402 B2/60/P5.4.1.4  
CA402+  
CA402+  
CA403 B2/63/P5.4.1.4  
CA403+  
CA403+  
CA404 B2/63/P5.4.1.4  
CA404+  
CA405 B2/63/P5.4.1.4

CA406 B2/64/P5.4.1.6  
CA406+  
CA407 B2/64/P5.4.1.7  
CA407+  
CA407+  
CA408 C1/9-29/T9-11.5  
CA408+  
CA409 C1/9-29/T9-11.15  
CA409+  
CA410 C1/9-29/T9-11.9  
CA410+  
CA501 B2/64/P5.4.1.8  
CA501+  
CA502 B2/64/P5.4.1.8  
CA502+  
CA503 B2/64/P5.4.1.8  
CA503+  
CA503+

ACCESSIBLE TO THE MAINTENANCE MAN?  
ARE CONTROLS, WHICH ARE USED FOR PERFORMING THE SAME FUNCTION ON DIFFERENT ITEMS OR EQUIPMENT, THE SAME SHAPE?  
ARE NO MORE THAN THREE DIFFERENT SIZES OF CONTROLS USED WHEN CODING CONTROLS FOR DISCRIMINATION BY ABSOLUTE SIZE?  
ARE CONTROL SHAPES BOTH VISUALLY AND TACTUALLY IDENTIFIABLE, AND FREE OF SHARP EDGES?  
DO COLOR CODES FOR IMMEDIATE ACTION CONTROLS CONFORM TO MIL-M-18012?  
ARE CONTROLS COMPATIBLE WITH THE HANDWEAR THAT MAY BE WORN BY THE MAINTENANCE TECHNICIAN  
WHERE BLIND OPERATION OF CONTROLS IS NECESSARY, ARE THEY SHAPE-CODED OR SEPARATED FROM ADJACENT CONTROLS BY AT LEAST FIVE INCHES?  
WHEN CONTROLS ARE USED IN A FIXED PROCEDURE, ARE THEY NUMBERED IN OPERATIONAL SEQUENCE?  
ARE COAXIAL KNOBS ADEQUATELY CODED TO AVOID CONFUSION?  
ARE CONTROL POSITION MARKINGS DESCRIPTIVE RATHER THAN CODED OR NUMBERED?  
ARE CONTROLS DESIGNED AND LOCATED SO THEY ARE NOT READILY SUSCEPTIBLE TO BEING MOVED ACCIDENTLY?  
ARE HIDDEN OR INTERNAL CONTROLS PROTECTED FROM ACCIDENTAL MOVEMENT?  
DO METHODS OF PROTECTING CONTROLS FROM ACCIDENTAL MOVEMENT STILL ALLOW THEIR BEING OPERATED WITHIN THE TIME REQUIRED?

#### TYPES OF CONTROLS

CB101 B2/65/P5.4.2.1  
CB101+  
CB101+  
CB102 B2/65/P5.4.2.1  
CB102 B2/65/P5.4.2.1  
CB103 B2/65/P5.4.2.1  
CB103+  
CB104 B2/65/P5.4.2.1  
CB104+  
CB104+  
CB105 B2/65/P5.4.2.1  
CB105+  
CB106 B2/65/P5.4.2.1  
CB106+  
CB107 B2/66/P5.4.2.1  
CB107+  
CB108 B2/66/P5.4.2.1  
CB108+  
CB108+  
CB109 B2/66/P5.4.2.1  
CB109+  
CB110 B2/66/P5.4.2.1

CB201 B2/71/P5.4.2.2  
CB201+  
CB201+  
CB202 B2/71/P5.4.2.2  
CB202+  
CB202+  
CB203 B2/71/P5.4.2.2  
CB203+  
CB204 B2/71/P5.4.2.2  
CB204+  
CB204+  
CB205 B2/73/P5.4.2.2  
CB205+  
CB205+  
CB206 B2/73/P5.4.2.2

ARE ROTARY SELECTOR SWITCHES USED FOR DISCRETE FUNCTIONS WHEN THREE OR MORE DETENTED POSITIONS ARE REQUIRED?  
ARE ROTARY SELECTOR SWITCHES EQUIPPED WITH A MOVING POINTER AND A FIXED SCALE?  
IS THE USE OF ROTARY SWITCHES HAVING SWITCH POSITIONS DIRECTLY OPPOSITE EACH OTHER AVOIDED?  
ARE ROTARY SWITCHES WHICH ARE NOT READILY VISIBLE DURING NORMAL SYSTEM OPERATION LIMITED TO NOT MORE THAN TWELVE POSITIONS?  
ARE STOPS PROVIDED ON ROTARY SWITCHES AT THE BEGINNING AND END OF THE RANGE OF CONTROL POSITIONS?  
DO ROTARY SWITCHES SNAP INTO POSITION WITHOUT STOPPING BETWEEN ADJACENT POSITIONS?  
ARE REFERENCE LINES PROVIDED ON ROTARY SWITCH CONTROLS?  
IS THE KNOB POINTER MOUNTED SUFFICIENTLY CLOSE TO ITS SCALE TO MINIMIZE PARALLAX BETWEEN THE POINTER AND THE SCALE MARKINGS?  
ARE ON-OFF POSITIONS OF KEY OPERATED SWITCHES CLEARLY LABELED?  
HAS THUMBWHEEL USE BEEN LIMITED TO ONLY THOSE FUNCTIONS REQUIRING COMPACT DIGITAL CONTROL-INPUT DEVICES WHERE READOUT OF THE MANUAL INPUT IS REQUIRED FOR VERIFICATION?  
ARE KNOBS USED WHEN LITTLE FORCE IS REQUIRED AND WHEN PRECISE ADJUSTMENTS OF A CONTINUOUS VARIABLE ARE REQUIRED?  
ARE MOVING KNOBS WITH FIXED SCALES USED IN PREFERENCE TO A MOVING SCALE WITH FIXED INDEX WHEN POSSIBLE?  
ARE CRANKS USED PRIMARILY FOR TASKS REQUIRING MANY ROTATIONS OF A CONTROL?  
FOR TASKS INVOLVING LARGE SLEWING MOVEMENTS, IN ADDITION TO SMALL FINE ADJUSTMENTS, IS A COMBINED CRANK HANDLE AND KNOB OR HANDWHEEL USED?  
ARE HANDWHEELS DESIGNED FOR TWO-HAND OPERATION USED WHERE THE BREAKOUT OR ROTATION FORCES ARE TOO LARGE TO BE OVERCOME WITH ONE HAND?  
WHERE TWO-HAND HANDWHEELS ARE EMPLOYED, WILL THERE

CB206+	RE TWO HANDS AVAILABLE DURING THE MAINTENANCE TASK?
CB207 R2/73/P5.4.2.2	IS KNURLING OR INDENTATION BUILT INTO THE HANDWHEEL
CB207+	TO FACILITATE OPERATOR GRASP?
CB208 R2/73/P5.4.2.2	ARE SPINNER HANDLES ATTACHED TO HANDWHEELS WHEN
CB208+	LARGE DISPLACEMENTS MUST BE RAPIDLY MADE AND WHERE
CB208+	THE SPINNER IS NOT PRECLUDED BY SAFETY CONSIDERA-
CB208+	TIONS?
CB209 R2/73/P5.4.2.2	EXCEPT FOR VALVES DO HANDWHEELS ROTATE CLOCK
CB209+	WISE FOR 'ON' OR 'INCREASE'?
CB210 R2/73/P5.4.2.2	IS THE DIRECTION OF MOTION OF HANDWHEELS INDICATED
CB210+	ON THE WHEEL OR IN CLOSE PROXIMITY THERETO?
CB301 R2/73/P5.4.3.1	ARE PUSH BUTTONS USED WHEN A CONTROL OR ARRAY OF
CB301+	CONTROLS IS NEEDED FOR MOMENTARY CONTACT?
CB302 R2/73/P5.4.3.1	ARE PUSH BUTTON SURFACES INDENTED OR FINISHED IN
CB302+	A HIGH DEGREE OF FRICTIONAL RESISTANCE TO PREVENT
CB302+	SLIPPING?
CB303 R2/76/P5.4.3.1	IS A POSITIVE INDICATION OF CONTROL ACTIVATION PRO-
CB303+	VIDED SUCH AS A SNAP FEEL, AUDIBLE CLICK OR INTEGRAL
CB303+	LIGHT?
CB304 R2/76/P5.4.3.1	IS A CHANNEL OR COVER GUARD PROVIDED WHEN IT IS
CB304+	ESSENTIAL TO PREVENT ACCIDENTAL ACTIVATION OF PUSH
CB304+	BUTTON?
CB305 R2/76/P5.4.3.1	IS THE SPACING BETWEEN PUSHBUTTONS ADEQUATE TO PRE-
CB305+	VENT THE ACCIDENTAL DEPRESSING OF TWO OR MORE BUT-
CB305+	TIONS SIMULTANEOUSLY?
CB306 R2/76/P5.4.3.1	ARE FOOT OPERATED PUSH BUTTONS USED ONLY IN THOSE
CB306+	CASES WHERE THE OPERATOR IS LIKELY TO HAVE BOTH
CB306+	HANDS OCCUPIED AT THE TIME THE PUSHBUTTON IS ACTIV-
CB306+	ATED?
CB307 R2/76/P5.4.3.1	ARE FOOT OPERATED PUSHBUTTONS DESIGNED TO BE OPER-
CB307+	ATED BY THE TOE AND BALL OF THE FOOT RATHER THAN
CB307+	THE HEEL?
CB308 R2/76/P5.4.3.1	WHERE SPACE PERMITS, HAS A PEDAL BEEN USED TO AID IN
CB308+	LOCATING THE ACTIVATING CONTROL?
CB309 R2/76/P5.4.3.1	ARE FRICTION SURFACES PROVIDED ON FOOT OPERATED
CB309+	PUSH BUTTON CONTROLS?
CB310 R2/76/P5.4.3.1	ARE PUSHBUTTONS ARRANGED IN THE FORM OF KEYBOARDS
CB310+	WHEN ALPHABETIC, NUMERIC, OR SPECIAL FUNCTION INFORMA-
CB310+	TION IS TO BE ENTERED INTO THE SYSTEM?
CB311 R2/79/P5.4.3.1	IS THE USE OF TOGGLE SWITCHES LIMITED TO THOSE FUN-
CB311+	CTIONS REQUIRING TWO DISCRETE POSITIONS OR WHERE
CB311+	SPACE LIMITATIONS ARE SEVERE?
CB312 R2/81/P5.4.3.1	ARE CHANNEL GUARDS OR LIFT-TO-UNLOCK SWITCHES USED
CB312+	WHERE THE ACCIDENTAL ACTIVATION OF A TOGGLE SWITCH
CB312+	MUST BE AVOIDED?
CB313 R2/81/P5.4.3.1	ARE TOGGLE SWITCHES VERTICALLY ORIENTED WITH 'OFF'
CB313+	BEING THE DOWN POSITION?
CB401 R2/84/P5.4.3.2	ARE LEVERS USED WHEN LARGE AMOUNTS OF FORCE OR DIS-
CB401+	PLACEMENT ARE INVOLVED OR WHEN MULTIDIMENSIONAL
CB401+	MOVEMENTS OF CONTROLS IS REQUIRED?
CB402 R2/84/P5.4.3.2	ARE LEVER HANDLES CODED TO INDICATE THEIR FUNCTION
CB402+	WHEN SEVERAL LEVERS ARE GROUPED TOGETHER?
CB403 R2/84/P5.4.3.2	ARE ALL LEVER LABELED AS TO FUNCTION AND DIRECTION
CB403+	OF MOTION?
CB404 R2/84/P5.4.3.2	WHEN LEVERS ARE USED TO MAKE FINE OR CONTINUOUS
CB404+	ADJUSTMENTS, IS LIMB SEGMENT SUPPORT
CB404+	PROVIDED FOR ELBOW, FOREARM, WRIST AS APPROPRIATE?
CB405 R2/86/P5.4.3.2	ARE PEDALS USED WHEN A LARGE AMOUNT OF DISPLACEMENT
CB405+	OR FORCE IS REQUIRED AND WHEN FOOT ACTIVATION IS
CB405+	DESIRABLE?
CB406 R2/86/P5.4.3.2	ARE PEDALS DESIGNED SO THAT THEY WILL RETURN TO THE
CB406+	NULL POSITION WHEN FORCE IS REMOVED?
CB407 R2/86/P5.4.3.2	ARE PEDALS COVERED WITH A NON-SLIP MATERIAL?
CB501 R2/86/P5.4.3.3	HAS PREFERENCE BEEN GIVEN TO THE USE OF FORCE SENS-
CB501+	ITIVE ISOMETRIC CONTROLS FOR TRACKING APPLICATIONS?
CB601 R2/152/P5.9.3	FOR CALIBRATION ADJUSTMENTS, ARE KNOBS SELECTED IN

CR601+	PREFERENC TO SCREWDRIVER ADJUSTMENT WHENEVER FREQU-
CR601+	ENT ADJUSTMENT MUST BE PERFORMED?
CR602 82/152/P5.9.3	IF SCREWDRIVER ADJUSTMENTS MUST BE MADE WITHOUT THE
CR602 82/152/P5.9.3	AID OF VISION, HAVE MECHANICAL GUIDES FOR THE SCREW-
CR602+	DRIVER BEEN PROVIDED OR THE SCREWS MOUNTED SO THAT
CR602+	THE SCREWDRIVER WILL NOT MOVE OUT OF POSITION?
CR603 82/152/P5.9.3	IS A REFERENCE SCALE PROVIDED FOR ALL ADJUSTMENT
CR603+	CONTROLS AND IS THE SCALE READILY VISIBLE?
CR604 82/152/P5.9.3	ARE MECHANICAL STOPS PROVIDED FOR CALIBRATION OR
CR604+	ADJUSTMENT CONTROLS WHICH ARE INTENDED TO HAVE A
CR604+	LIMITED DEGREE OF MOTION?
CR605 82/153/P5.9.3	ARE SENSITIVE ADJUSTMENT POINTS LOCATED OR GUARDED
CR605+	SO THAT THEY WILL NOT BE DISTURBED INADVERTENTLY?
CR606 82/153/P5.9.3	ARE INTERNAL CONTROLS LOCATED AWAY FROM DANGEROUS
CR606+	VOLTAGES, ROTATING MACHINERY, OR OTHER HAZARDS?
CR607 82/153/P5.9.3	IF INTERNAL CONTROLS ARE LOCATED NEAR HAZARDS, ARE
CR607+	THE CONTROLS APPROPRIATELY SHIELDED AND LABELED?
CR608 C1/9-29/T9-11.17	ARE ADJUSTMENT CONTROLS EASY TO SET AND LOCK?
CR609 C1/9-29/T9-11.6	FOR CONCENTRIC SHAFT VERNIER CONTROLS, IS THE LARGER
CR609+	DIAMETER CONTROL USED FOR FINE ADJUSTMENT?
CR610 C1/9-29/T9-11.7	DO KNOBS FOR PRECISION ADJUSTMENTS HAVE A 2 INCH
CR610+	MINIMUM DIAMETER?
CR611 C1/9-29/T9-11.10	ARE CONTROL SCALES ONLY FINE ENOUGH TO PERMIT
CR611+	ACCURATE SETTING?
CR613 C1/9-29/T9-11.14	ARE TOOL-OPERATED CONTROLS OPERABLE BY SCREWDRIVER
CR613+	OR OTHER MEDIUM SIZE STANDARD HAND TOOL?
CR614 C1/9-29/T9-11.16	ARE CALIBRATION INSTRUCTIONS PLACED AS CLOSE TO THE
CR614+	CALIBRATING CONTROL AS POSSIBLE?
CR615 C1/9-29/T9-11.18	IS VISUAL, AUDITORY, OR TACTILE FEEDBACK PROVIDED FOR
CR615+	ALL PHYSICAL ADJUSTMENT PROCEDURES?
CR616 C1/9-30/T9-11.19	IS SOME TYPE OF INDEXING PROVIDED FOR ADJUSTMENT
CR616+	CONTROLS?
CR617 C1/9-30/T9-11.20	ARE DESIGNS AVOIDED WHICH MAY DEVELOP EXCESSIVE
CR617+	BACKLASH, AND CAUSE NEEDLESS ADJUSTMENT?
CR618 L4/5-45	ARE ADJUSTMENTS OF THE 'CENTER ZERO' TYPE USED WHEN
CR618+	POSSIBLE?

# DISPLAYS-GENERAL CRITERIA

DA101 B2/25/P5.2.1.2  
DA101+  
DA101+  
DA102 B2/25/P5.2.1.2  
DA102+  
DA102+  
DA103 B2/25/P5.2.1.2  
DA103+  
DA103

IS THE INFORMATION DISPLAYED LIMITED TO THAT WHICH IS NECESSARY TO PERFORM SPECIFIC ACTIONS OR TO MAKE DECISIONS?  
IS INFORMATION DISPLAYED ONLY TO THE DEGREE OF SPECIFICITY AND PRECISION REQUIRED FOR A SPECIFIC OPERATOR ACTION OR DECISION?  
IS INFORMATION PRESENTED IN A DIRECTLY READABLE FORM TO AVOID THE NEED FOR TRANSPOSING, COMPUTING, INTERPOLATING, OR MENTAL TRANSLATION TO OTHER UNITS?

DA104 B2/26/P5.2.1.2  
DA104+  
DA104+  
DA105 B2/25/P5.2.1.2  
DA105+  
DA105+  
DA106 B2/25/P5.2.1.2  
DA106+  
DA107 C1/9-30/T 9-11.6  
DA107+  
DA108 C1/9-30/T 9-11.8  
DA108+  
DA109 C1/9-30/T 9-11.13  
DA109+  
DA109+  
DA110 L1/78/P 5.F  
DA110+  
DA110+  
DA201 B2/26/P5.2.1.3  
DA201+  
DA201+  
DA201+  
DA202 B2/26/P5.2.1.3  
DA202+  
DA202+  
DA203 B2/26/P5.2.1.3  
DA203+  
DA203+  
DA204 B2/26/P5.2.1.3  
DA204+  
DA204+  
DA204+  
DA205 B2/26/P5.2.1.3  
DA205 B2/26/P5.2.1.3  
DA205+  
DA205+  
DA206 B2/26/P5.2.1.3  
DA206+  
DA206+  
DA207 B2/26/P5.2.1.3  
DA207+  
DA207+  
DA208 B2/26/P5.2.1.3  
DA208+  
DA208+

IS REDUNDANCY IN THE DISPLAY OF INFORMATION TO A SINGLE OPERATOR AVOIDED UNLESS IT IS REQUIRED TO ACHIEVE A SPECIFIED RELIABILITY?  
IS THE SIMULTANEOUS DISPLAY OF INFORMATION FOR PERFORMING DIFFERENT ACTIVITIES AVOIDED UNLESS THEY ARE COMPARABLE FUNCTIONS REQUIRING THE SAME INFORMATION?  
ARE DISPLAYS DESIGNED SUCH THAT FAILURE OF THE DISPLAY OR DISPLAY CIRCUIT IS IMMEDIATELY APPARENT?  
ARE GO-NO-GO TYPE DISPLAYS USED IF THEY WILL CONVEY SUFFICIENT INFORMATION?  
ARE NUMERICAL SCALES USED ONLY WHEN QUANTITATIVE DATA IS REQUIRED?  
DO DISPLAYS WHICH REQUIRE ARITHMETIC TRANSFORMATION HAVE THE TRANSFORMATION FACTOR CLEARLY INDICATED ON OR CLOSE TO THE DISPLAY IN QUESTION?  
DO INSTRUMENT SCALES CONTAIN ONLY THE INFORMATION NEEDED FOR A MAINTENANCE TECHNICIAN TO MAKE A DECISION?  
HAVE DISPLAYS BEEN LOCATED AND DESIGNED SO THAT THEY CAN BE READ TO THE DEGREE OF ACCURACY REQUIRED BY PERSONNEL IN THE NORMAL OPERATING OR SERVICING POSITION?  
CAN ACCESS TO, AND THE READING OF DISPLAYS BE ACCOMPLISHED WITHOUT THE USE OF LADDERS, SUPPLEMENTARY LIGHTING, OR OTHER SPECIAL EQUIPMENT?  
WHEN FEASIBLE, ARE DISPLAY FACES PERPENDICULAR TO THE OPERATOR'S NORMAL LINE OF SIGHT, AND AT WORST, NEVER LESS THAN 45° FROM THE NORMAL LINE OF SIGHT?  
ARE DISPLAYS CONSTRUCTED, ARRANGED AND MOUNTED SO TO PREVENT REDUCTION OF INFORMATION TRANSFER DUE TO THE REFLECTION OF THE AMBIENT ILLUMINATION FROM THE DISPLAY COVER?  
IS THE DISPLAY SHOCK MOUNTED SO THAT AMBIENT VIBRATIONS ARE DAMPED AND DO NOT DEGRADE USER PERFORMANCE BELOW THE LEVEL REQUIRED TO PERFORM THE MAINTENANCE ACTION?  
ARE ALL MAINTENANCE DISPLAYS WHICH ARE NECESSARY TO SUPPORT A MAINTENANCE ACTIVITY OR SEQUENCE OF ACTIVITIES, GROUPED TOGETHER?  
ARE DISPLAYS ARRANGED IN RELATION TO ONE ANOTHER ACCORDING TO THEIR SEQUENCE OF USE OR THE FUNCTIONAL RELATIONS OF THE COMPONENTS THEY REPRESENT?  
ARE DISPLAYS ARRANGED IN SEQUENCE FOR VIEWING FROM LEFT TO RIGHT OR TOP TO BOTTOM?

DA209 B2/26/P5.2.1.3

ARE DISPLAYS USED MOST FREQUENTLY GROUPED TOGETHER AND PLACES IN THE OPTIMUM VISUAL ZONE (15 DEGREES ON EITHER SIDE OF A VERTICAL CENTERLINE AND 0 TO 30 DEGREES BELOW A HORIZONTAL CENTERLINE)?

DA210 B2/26/P5.2.1.3  
DA210

ARE VERY IMPORTANT OR CRITICAL DISPLAYS PLACED IN THE OPTIMUM VISUAL ZONE OR OTHERWISE HIGH LIGHTED?

DA211 B2/26/P 5.2.1.3  
DA211 B2/26/P5.2.1.3  
DA212 C1/9-30/T 9-11.2

IS THE ARRANGEMENT OF DISPLAYS CONSISTENT FROM APPLICATION TO APPLICATION THROUGHOUT THE SYSTEM?  
ON UNITS HAVING OPERATOR DISPLAYS, ARE MAINTENANCE



DA212+  
 DA212+  
 DA213 C1/9-30/T 9-11.3  
 DA213+  
 DA213+  
 DA301 B2/29/P5.2.1.4  
 DA301+  
 DA302 B2/29/P5.2.1.4  
 DA302+  
 DA303 B2/29/P5.2.1.4  
 DA303+  
 DA304 B2/29/P5.2.1.4  
 DA304+  
 DA305 C1/9-30/T 9-11.12  
 DA305+  
 DA305+

DISPLAYS LOCATED BEHIND ACCESS DOORS ON OPERATOR'S PANEL?  
 ON UNITS WITHOUT AN OPERATOR PANEL, ARE MAINTENANCE DISPLAYS LOCATED ON ONE FACE ACCESSIBLE IN THE NORMAL INSTALLED POSITION?  
 ARE CODING TECHNIQUES USED TO FACILITATE THE DISCRIMINATION BETWEEN INDIVIDUAL DISPLAYS?  
 ARE CODING TECHNIQUES USED TO FACILITATE THE IDENTIFICATION OF FUNCTIONALLY RELATED DISPLAYS?  
 ARE CODING TECHNIQUES USED TO INDICATE THE RELATIONSHIP BETWEEN DISPLAYS?  
 IS ALL CODING OF DISPLAYS WITHIN THE SYSTEM UNIFORM?  
 ARE DISPLAYS WHICH PROVIDE TOLERANCE RANGES CODED SO BOTH THE CORRECT READING AND TOLERANCE LIMITS ARE EASILY IDENTIFIED?

#### TYPES OF DISPLAYS

DB101 B2/30/5.2.2.1

HAVE TRANSILLUMINATED (EDGE OR BACK LIGHTING TECHNIQUES USED WITH PLASTIC MATERIALS) INDICATORS BEEN USED TO DISPLAY QUALITATIVE INFORMATION OF IMPORTANT SYSTEM STATUS DURING MAINTENANCE ACTIVITIES?

DB102 B2/30/5.2.2.1  
 DB102+  
 DB102+  
 DB103 B2/30/5.2.2.1  
 DB103+  
 DB103+  
 DB104 B2/30/5.2.2.1  
 DB104+  
 DB104+  
 DB104+  
 DB105 B2/30/5.2.2.1  
 DB105 B2/30/5.2.2.1  
 DB105+  
 DB106 B2/30/5.2.2.1  
 DB106+  
 DB106+  
 DB107 B2/30/P5.2.2.1  
 DB107+  
 DB107+  
 DB108 B2/30/P5.2.2.1  
 DB108+  
 DB108+  
 DB108+  
 DB109 B2/30/P5.2.2.1  
 DB109+  
 DB110 B2/30/P5.2.2.1  
 DB110+  
 DB111 B2/30/P5.2.2.1  
 DB111+  
 DB111+  
 DB112 C1/9-30/T 9-11.15  
 DB112+  
 DB201 B2/47/P5.3.1  
 DB201+  
 DB202 B2/47/P5.3.1  
 DB202+  
 DB203 B2/47/P5.3.1  
 DB203+  
 DB203+  
 DB204 C1/9-30/T 9-11.11  
 DB204+  
 DB204+  
 DB301 L6/58/P C.1  
 DB301+  
 DB301+  
 DB302 L6/58/P C.2

DO LIGHTS, INCLUDING THOSE USED IN ILLUMINATED PUSH BUTTONS, DISPLAY EQUIPMENT RESPONSE IN ADDITION TO CONTROL POSITION?  
 IS THE USE OF LIGHTS HELD TO A MINIMUM NECESSARY ONLY TO DISPLAY THAT INFORMATION NECESSARY FOR EFFECTIVE SYSTEM MAINTENANCE/OPERATION?  
 ARE LIGHTS WHICH SHOW THE STATUS OF THE SUBSYSTEM OR ITS COMPONENTS SET ASIDE FROM MASTER CAUTION, MASTER WARNING, MASTER ADVISORY AND SUMMATION LIGHTS?  
 WHEN A TRANSILLUMINATED INDICATOR IS ASSOCIATED WITH A CONTROL, IS THE INDICATOR LIGHT SO LOCATED AS TO BE READILY AND UNAMBIGUOUSLY ASSOCIATED WITH THE CONTROL AND VISIBLE DURING CONTROL OPERATION?  
 FOR CRITICAL FUNCTIONS, ARE INDICATOR LIGHTS LOCATED WITHIN 15 DEGREES OF THE OPERATORS NORMAL LINE OF SIGHT?  
 ARE WARNING LIGHTS AN INTEGRAL PART OF, OR LOCATED ADJACENT TO, THE CONTROL DEVICE UPON WHICH ACTION IS TO BE TAKEN?  
 ARE INDICATOR LIGHTS, USED SOLELY FOR MAINTENANCE AND ADJUSTMENT, AND REFERRED TO INFREQUENTLY, READILY ACCESSIBLE WHEN REQUIRED BUT OTHERWISE COVERED OR NON-VISIBLE DURING NORMAL EQUIPMENT OPERATION?  
 IS THE LUMINANCE OF TRANSILLUMINATED DISPLAYS COMPATIBLE WITH THE AMBIENT ILLUMINANCE LEVEL?  
 WHEN DISPLAYS ARE USED UNDER VARIED AMBIENT ILLUMINANCE, IS A DIMMING CONTROL PROVIDED?  
 ARE PROVISIONS MADE TO PREVENT DIRECT AND/OR REFLECTED SUNLIGHT FROM MAKING INDICATORS APPEAR TO BE ILLUMINATED WHEN THEY ARE NOT?  
 ARE CRITICAL WARNING LIGHTS ISOLATED FROM OTHER LESS IMPORTANT LIGHTS FOR BEST EFFECTIVENESS?  
 ARE AUDIO DISPLAYS EQUIPPED WITH CIRCUITRY TEST DEVICES OR OTHER MEANS OF OPERABILITY TEST?  
 DOES THE DESIGN OF AUDIO DISPLAY DEVICES AND CIRCUITS PRECLUDE FALSE ALARMS?  
 DOES THE AUDIO DISPLAY DEVICE AND CIRCUITS PRECLUDE WARNING SIGNAL FAILURE IN THE EVENT OF SYSTEM OR EQUIPMENT FAILURE AND VICE VERSA ?  
 ARE AUDITORY SIGNALS USED TO SUPPLEMENT LIGHTS FOR DISPLAYS NOT CONSTANTLY WATCHED AND WHERE CHANGES IN INDICATION MUST BE NOTED IMMEDIATELY?  
 DO CRT DISPLAYS RESOLVE AS MUCH DETAIL AS IS REQUIRED FOR ADEQUATE INTERPRETATION OF THE DISPLAYED INFORMATION?  
 IS BRIGHTNESS CONTRAST BETWEEN CRT SIGNAL AND BACK-

DB302+  
 DB303 L6/58/P C+6  
 DB303+  
 DB303+  
 DB304 L6/58/P C+8  
 DB304+  
 DB304+  
 DB305 L6/59/P C+11  
 DB305+  
 DB306 A1/8-5/F8-2  
 DB306+  
 DB307 A1/8-5/F8-2  
 DB307+  
 DB401 L6/65/P H+1  
 DB401+  
 DB401+  
 DB401+  
 DB402 L6/65/P H+2  
 DB402+  
 DB403 L6/65/P H+3-6  
 DB403+  
 DB404 L6/65/P H+3-6  
 DB404+  
 DB404+  
 DB501 L6/66/P I+1  
 DB501+  
 DB502 L6/66/P I+2  
 DB502+  
 DB502+  
 DB503 L6/66/P I+4  
 DB504 L6/66/P I+3  
 DB504+  
 DB505 L6/66/P I+5  
 DB505+  
 DB601 L6/67/P J+2  
 DB601+  
 DB601+  
 DB602 L6/67/P J+3  
 DB602+  
 DB603 L6/67/P J+6  
 DB603+  
 DB603+  
 DB604 L6/68/P K+2  
 DB604+  
 DB605 L6/68/P K+5  
 DB605+  
 DB605+

GROUND SUFFICIENTLY HIGH TO AFFORD GOOD VISIBILITY?  
 IS THE AMBIENT ILLUMINATION IN THE CRT AREA SUFFICIENTLY HIGH FOR OTHER VISUAL MAINTENANCE FUNCTIONS BUT NOT TO INTENSE TO INTERFERE WITH THE VISIBILITY OF THE CRT SIGNALS?  
 ARE SCOPES ADEQUATELY HOODED OR SHIELDED FROM ROOM LIGHT WHEN ILLUMINATION IS SUFFICIENTLY HIGH FOR OTHER VISUAL TASKS?  
 ARE SURFACES IMMEDIATELY ADJACENT TO CRT DISPLAYS FINISHED IN A DULL MATTE?  
 ARE THE SCALES USED ON CRTS EASY TO READ AND ARE THEY DESIGNED TO MAXIMIZE ACCURACY?  
 ARE GRID MARKERS PROVIDED IN CRT DISPLAYS TO INCREASE ACCURACY OF INTERPOLATION?  
 WHERE FEASIBLE, ARE COUNTERS USED TO PRESENT LARGE RANGES OF QUANTITATIVE INFORMATION WHERE CONTINUOUS TREND INDICATION IS NOT NECESSARY AND WHERE QUICK PRECISE READING IS REQUIRED?  
 DO NUMBERS ON COUNTER, CHANGE BY SNAP ACTION RATHER THAN BY CONTINUOUS MOVEMENT?  
 DOES SPACE BETWEEN NUMERALS AND THE MOUNTING TECHNIQUE PROVIDE FOR GOOD LEGIBILITY OF THE COUNTER?  
 DO COUNTERS WHICH ARE USED TO INDICATE SEQUENCING RESET AUTOMATICALLY UPON COMPLETION OF A SEQUENCE, AND IS PROVISION MADE FOR MANUAL RESETTING ALSO?  
 ARE FLAGS LIMITED TO THE DISPLAY OF ONLY QUALITATIVE NON-EMERGENCY CONDITIONS?  
 IF FLAGS ARE USED TO INDICATE THE MALFUNCTION OF A VISUAL DISPLAY, DOES THE MALFUNCTION POSITION OF THE FLAG AT LEAST PARTIALLY OBSCURE THE DISPLAY?  
 DO DISPLAY FLAGS OPERATE WITH A SNAP ACTION?  
 ARE FLAGS COLORED TO HAVE A HIGH CONTRAST TO THE BACKGROUND?  
 ARE FLAGS AS CLOSE TO THE SURFACE OF THE PANEL OR INDICATOR AS POSSIBLE?  
 WHERE POSSIBLE, IS PRINTED INFORMATION PROVIDED IN DIRECTLY USABLE FORM, I.E. REQUIREMENTS FOR DECODING OR INTERPOLATION ARE MINIMIZED?  
 IS PRINTED MATERIAL PRESENTED IN A FORMAT THAT IS EASILY AND QUICKLY UNDERSTANDABLE?  
 IS A POSITIVE INDICATION GIVEN FOR THE NEED TO SERVICE THE PRINTER WITH A SUPPLY OF PAPER, INK, RIBBON, ETC.?  
 WHERE PLOTTERS ARE EMPLOYED, IS THE PLOTTING POINT READILY VISIBLE?  
 ARE AIDS, SUCH AS OVERLAYS, PROVIDED WHEN THE OPERATOR IS REQUIRED TO INTERPRET GRAPHIC DATA OF PLOTTERS?

#### DISPLAY CONSTRUCTION:

DC001 L6/60/P D+2  
 DC001+  
 DC001+  
 DC002 L6/60/P D+3  
 DC002+  
 DC002+  
 DC003 L6/60/P D+5  
 DC004 L6/60/P D+6  
 DC004+  
 DC005 L6/60/P D+7  
 DC005+  
 DC006 L6/60/P D+10  
 DC006+  
 DC007 L6/60/P D+11  
 DC007+  
 DC008 L6/60/P D+12  
 DC008+  
 DC101 L6/62/P E+1

WHERE GIVEN OPERATING CONDITIONS ALWAYS FALL WITHIN A CERTAIN RANGE ON THE SCALE, ARE THESE AREAS MADE READILY IDENTIFIABLE BY MEANS OF CODING?  
 IS COLOR CODING OF DISPLAY INDICATORS AVOIDED IF THE INSTRUMENT MUST BE READ UNDER AN ILLUMINANT OTHER THAN WHITE?  
 WHEREVER POSSIBLE, DO SCALES START AT ZERO?  
 DO SCALE GRADUATIONS ON INDICATORS PROGRESS BY ONE, TWO, OR FIVE UNITS, OR DECIMAL MULTIPLES THEREOF?  
 DOES THE INCREASE IN NUMERICAL PROGRESSION READ CLOCKWISE, FROM LEFT TO RIGHT, OR FROM THE BOTTOM UP?  
 IS ADEQUATE CONTRAST USED BETWEEN SCALE FACE AND MARKINGS?  
 ON STATIONARY SCALES, ARE ALL NUMBERS ORIENTED VERTICALLY?  
 ON MOVING SCALES, ARE NUMBERS UPRIGHT AT THE READING POSITION?  
 ON MOVING POINTER-FIXED SCALE DISPLAY INDICATORS,



DC101+	DOES THE MAGNITUDE OF THE READING INCREASE WITH A
DC101+	CLOCKWISE MOVEMENT OF THE POINTER?
DC102 L6/62/P E+6	FOR EASE OF MONITORING A GROUP OF CIRCULAR SCALE
DC102+	TYPE INDICATORS, ARE THE DISPLAYS ARRANGED IN ROWS
DC102+	WITH POINTERS NORMALLY ALLIGNED HORIZONTALLY, OR IN
DC102+	COLUMNS WITH POINTERS ALLIGNED VERTICALLY?
DC103 L6/62/P E+7	WHERE SPACE IS LIMITED, ARE NUMERALS PLACED INSIDE
DC103+	OF THE GRADUATION MARKS TO AVOID CONSTRICTION OF
DC103+	THE SCALE?
DC114 L6/62/P E+8	WHERE SPACE IS NOT LIMITED, ARE NUMERALS PLACED OUT-
DC114+	SIDE OF THE GRADUATION MARKS TO AVOID HAVING THE
DC114+	NUMBERS COVERED BY THE POINTER?
DC105 L6/63/P G+7	IF THE UNUSED PORTION OF A SCALE IS COVERED, IS THE
DC105+	OPEN WINDOW LARGE ENOUGH TO PERMIT AT LEAST ONE
DC105+	NUMBERED GRADUATION TO APPEAR AT EACH SIDE OF ANY
DC105+	SETTING?
DC106 C1/9-30/T 9-11.5	WHEN CENTER-NUL DISPLAYS ARE USED, IS THE CIRCUIT
DC106+	DESIGNED SO THAT IF POWER FAILS, THE INDICATOR WILL
DC106+	NOT REST IN THE IN-TOLERANCE POSITION?
DC107 C1/9-30/T- 9-11.7	ARE MOVING-POINTER FIXED SCALE INDICATORS USED FOR
DC107+	ADJUSTMENT PROCEDURES?
DC108 C1/9-30/T 9-11.9	ARE SCALES PROVIDED WITH ONLY ENOUGH GRADUATION FOR
DC108+	REQUIRED ACCURACY WITHOUT INTERPOLATION?
DC109 C1/9-30/T 9-11.10	IS A SPECIAL CALIBRATION POINT PROVIDED ON THE
DC109+	SCALE OR ON A SEPERATE OVERLAY IF THE EDGES AND
DC109+	MIDPOINT OF TOLERANCE RANGE ARE NOT SUFFICIENT FOR
DC109+	ACCURATE CALIBRATION?
DC110 C1/9-30/T 9-11.10	ARE IRREGULAR SCALE BREAKDOWNS AVOIDED?

#### CONTROL-DISPLAY RELATIONSHIPS

DD001 B2/19/P 5.1.1.1	IS THE CONTROL-DISPLAY RELATIONSHIP FUNCTIONALLY
DD001+	EFFECTIVE AND REQUIRE A MINIMUM OF DECODING OR
DD001+	MENTAL INVOLVEMENT ON THE PART OF THE TECHNICIAN?
DD002 B2/19/P 5.1.1.2	IS THE RELATIONSHIP OF THE CONTROL TO ITS ASSOCI-
DD002+	ATED DISPLAY IMMEDIATELY APPARENT AND UNAMBIGUOUS
DD002+	TO THE TECHNICIAN/OPERATOR?
DD003 B2/19/P 5.1.1.3	ARE CONTROL-DISPLAY RELATIONSHIPS APPARENT THROUGH
DD003+	DESIGN CONSIDERATIONS OF PROXIMITY, SIMILARITY OF
DD003+	GROUPINGS, CODING, FRAMING, LABELING, AND SIMILAR TECH-
DD003+	NIQUES?
DD004 B2/19/P 5.1.1.4	IS THE PRECISION OF DISPLAY PRESENTATION CONSISTENT
DD004+	WITH THE RANGE OF CONTROL MOVEMENT REQUIRED FOR
DD004+	ADEQUATE SYSTEM PERFORMANCE?
DD005 B2/19/P 5.1.2.1	ARE FUNCTIONALLY RELATED CONTROLS AND DISPLAY
DD005+	LOCATED IN PROXIMITY AND ARRANGED IN FUNCTIONAL
DD005+	GROUPS?
DD006 B2/19/P 5.1.2.1.1.	ARE FUNCTIONAL GROUPS OF CONTROLS-DISPLAYS LOCATED
DD006+	TO PROVIDE FOR LEFT TO RIGHT (PREFERRED) OR TOP-TO-
DD006+	BOTTOM ORDER OF USE, OR BOTH
DD007 B2/19/P 5.1.2.1.1.2	ARE CONTROL-DISPLAY GROUPS ARRANGED SO THAT THE
DD007+	MORE FREQUENTLY USED GROUPS AND MOST IMPORTANT
DD007+	GROUPS ARE LOCATED IN AREAS OF EASIEST ACCESS?
DD008 B2/20/P 5.1.2.1.1.4	IS THE LOCATION OF RECURRING FUNCTIONAL CONTROL-
DD008+	DISPLAY GROUPS SIMILAR FROM PANEL TO PANEL?
DD009 B2/20/P 5.1.2.2	DOES LOCATION AND ARRANGEMENT OF CONTROL AND DIS-
DD009+	PLAYS AID THE TECHNICIAN/OPERATOR IN DETERMINING
DD009+	WHICH CONTROLS ARE USED WITH WHICH DISPLAYS, WHICH
DD009+	EQUIPMENT COMPONENT EACH CONTROL AFFECTS AND WHICH
DD009+	EQUIPMENT FUNCTION EACH DISPLAY DESCRIBES?
DD010 B2/20/P 5.1.2.3	ARE CONTROLS AND DISPLAYS WITHIN FUNCTIONAL GROUPS
DD010+	LOCATED ACCORDING TO OPERATIONAL SEQUENCE OR FUNC-
DD010+	TION, OR BOTH?
DD011 B2/20/P 5.1.2.3.1	IF CONTROLS ARE ARRANGED IN FEWER ROWS THAN DIS-
DD011+	PLAYS, ARE THE CONTROLS AFFECTING THE TOP ROW OF
DD011+	DISPLAYS POSITIONED AT THE FAR LEFT, AND THE CON-
DD011+	TROLS AFFECTING THE SECOND ROW OF DISPLAYS PLACED
DD011+	IMMEDIATELY TO THE RIGHT OF THESE?
DD012 B2/20/P 5.1.2.3.3	WHEN THE MANIPULATION OF ONE CONTROL REQUIRES THE

DD012*	READING OF SEVERAL DISPLAYS, IS THE CONTROL PLACED
DD012*	AS NEAR AS POSSIBLE TO THE RELATED DISPLAYS AND
DD012*	PREFERABLY BENEATH THE MIDDLE OF THE DISPLAYS?
DD013 82/20/P 5.1.2.3.4	WHEN SEPERATE DISPLAYS ARE AFFECTED BY A COMBINED
DD013*	CONTROL (E.G. CONCENTRICALLY GANGED KNOBS), IS THE
DD013*	DISPLAY ARRANGED FROM LEFT TO RIGHT WITH THE COM-
DD013*	BINED CONTROL UNDERNEATH THE CENTER OF THE DISPLAY?
DD014 82/21/P 5.1.2.3.5	WHEN RELATED CONTROLS AND DISPLAYS MUST BE LOCATED
DD014*	ON SEPERATE PANELS AND BOTH PANELS ARE MOUNTED AT
DD014*	APPROXIMATELY THE SAME ANGLE RELATIVE TO THE OPER-
DD014*	ATOR, DO THE CONTROL POSITIONS ON ONE PANEL CORRES-
DD014*	POND TO THE ASSOCIATED DISPLAY POSITION OF THE
DD014*	OTHER PANEL?
DD015 82/21/P 5.1.2.3.6	ARE CONTROLS AND DISPLAYS ORIENTED TO CORRESPOND TO
DD015*	THE CONTROLLED AND MONITORED COMPONENTS (E.G. IS THE
DD015*	POSITION OF ENGINE CONTROLS ORIENTED AS IF THE
DD015*	OPERATOR FACES THE NORMAL DIRECTION OF VEHICLE
DD015*	MOVEMENT?
DD016 82/21/P 5.1.3.1	DO DISPLAY INDICATORS CLEARLY AND UNAMBIGUOUSLY
DD016*	DIRECT AND GUIDE THE APPROPRIATE CONTROL RESPONSE ?
DD017 82/21/P 5.1.3.2	IS THE TIME LAG BETWEEN THE RESPONSE OF A SYSTEM
DD017*	TO A CONTROL INPUT AND THE DISPLAY PRESENTATION OF
DD017*	THE RESPONSE CONSISTENT WITH SAFE AND EFFICIENT
DD017*	SYSTEM OPERATION?
DD018 82/21/P 5.1.3.3	DOES CLOCKWISE MOVEMENT OF A ROTARY CONTROL PRODUCE
DD018*	A CLOCKWISE MOVEMENT OF THE CIRCULAR SCALE POINTER
DD018*	AND AN INCREASE IN THE MAGNITUDE OF THE SETTING?
DD019 82/21/P 5.1.3.3	DOES MOVEMENT OF A LINEAR CONTROL FORWARD, UP, OR TO
DD019*	THE RIGHT PRODUCE A CLOCKWISE MOVEMENT OF CIRCULAR
DD019*	SCALE POINTERS AND AN INCREASE IN THE MAGNITUDE OF
DD019*	THE SETTING?
DD020 82/21/P 5.1.3.4	DOES CLOCKWISE MOVEMENT OF A ROTARY CONTROL PRODUCE
DD020*	MOVEMENT UP OR TO THE RIGHT FOR HORIZONTAL AND
DD020*	VERTICLE SCALE POINTERS AND AN INCREASE IN THE MAG-
DD020*	NITUDE OF THE READING?
DD021 82/21/P 5.1.3.4	DOES MOVEMENT OF A LINEAR CONTROL FORWARD, UP, OR TO
DD021*	THE RIGHT PRODUCE A MOVEMENT UP OR TO THE RIGHT FOR
DD021*	HORIZONTAL AND VERTICAL SCALE POINTERS AND AN IN-
DD021*	CREASE IN THE MAGNITUDE OF THE READING?
DD022 82/21/P 5.1.3.5	IS THE USE OF DISPLAYS WITH MOVING SCALES AND FIXED
DD022*	POINTERS OR CURSORS AVOIDED?
DD023 82/21/P 5.1.3.5	WHEN CIRCULAR FIXED POINTER, MOVING-SCALE INDICATORS
DD023*	ARE NECESSARY, DOES CLOCKWISE MOVEMENT OF ROTARY
DD023*	CONTROLS OR MOVEMENT OF A LINEAR CONTROL FORWARD, UP
DD023*	OR TO THE RIGHT PRODUCE A COUNTERCLOCKWISE MOVEMENT
DD023*	OF THE SCALE AND AN INCREASE IN THE MAGNITUDE OF
DD023*	THE READING?
DD024 82/21/P 5.1.3.6	WHEN VERTICAL OR HORIZONTAL FIXED-POINTER, MOVING-
DD024*	SCALE INDICATORS ARE NECESSARY, DOES CLOCKWISE MOVE-
DD024*	MENT OF AN ASSOCIATED ROTARY CONTROL PRODUCE A
DD024*	MOVEMENT OF THE SCALE DOWN OR TO THE LEFT AND AN
DD024*	INCREASE IN THE MAGNITUDE OF THE READING?
DD025 82/21/P 5.1.3.6	FOR VERTICLE OR HORIZONTAL FIXED-POINTER, MOVING-
DD025*	SCALE INDICATORS, DOES MOVEMENT OF A LINEAR CONTROL
DD025*	FORWARD, UP, OR TO THE RIGHT MOVE THE SCALE DOWN OR
DD025*	TO THE LEFT AND INCREASE THE MAGNITUDE OF THE READ-
DD025*	ING?

# CONSTRUCTION-GENERAL CRITERIA

EA001 A3/DN2G3/P2.3.A  
EA001+  
EA002 A3/DN2G3/P2.3.C  
EA002+  
EA002+  
EA003 A3/DN2G3/P2.3.D  
EA003+  
EA004 A3/DN2G3/P2.3.E  
EA004+  
EA005 A3/DN2G3/P2.3.F  
EA005+  
EA005+  
EA006 A3/DN2G3/P2.3.G  
EA006+  
EA007 A3/DN2G3/P2.3.H  
EA007+  
EA007+  
EA008 A3/DN2G3/P2.3.I  
EA008+  
EA008+  
EA009 A3/DN2G3/P2.3.J  
EA009+  
EA010 A3/DN2G3/P2.3.K  
EA010+  
EA011 L6/14/P 8.9  
EA011+  
EA012 L6/14/P 8.10  
EA012+  
EA013 L6/14/P 8.11  
EA013+  
EA014 L6/14/P 8.13  
EA014+  
EA014+  
EA015 B2/152/P5.9.1.A  
EA015+  
EA015+  
EA016 B2/152/P5.9.1.B  
EA016+  
EA017 B2/152/P5.9.1.C  
EA017+  
EA018 A2/DN2A1/P1.14  
EA018+  
EA019 A2/DN2E2/P1.17  
EA019+  
EA020 A2/DN2E2/P1.20  
EA020+  
EA020+  
EA021 A2/DN2E2/P1.21  
EA021+  
EA022 A2/DN2E2/P1.22  
EA022+  
EA023 A2/DN2E2/P1.23  
EA023+  
EA024 A2/DN2E2/P1.24  
EA024+  
EA024+  
EA025 L4/5-47  
EA025+  
EA025+  
EA026 L4/5-48  
EA026+

EA026 L4/5-48

EA027 L4/5-50

ARE CIRCUITS GROUPED WITHIN UNITS TO MINIMIZE THE  
CRISSCROSSING OF SIGNALS BETWEEN UNITS?  
CAN EACH UNIT BE CHECKED AND ADJUSTED SEPARATELY,  
AND THEN BE CONNECTED INTO A FUNCTIONING SUBSYSTEM  
WITH LITTLE OR NO ADDITIONAL ADJUSTMENT?  
ARE OVERLOAD INDICATORS PROVIDED ON EACH MAJOR  
CIRCUIT?  
ARE REGULARLY STOCKED STANDARD PARTS USED WHEREVER  
POSSIBLE?  
ARE ASSEMBLIES, SUBASSEMBLIES, AND PARTS INTER-  
CHANGEABLE WITHIN AND BETWEEN EQUIPMENTS WHENEVER  
POSSIBLE?  
ARE MECHANICAL COMPONENTS DESIGNED TO BE LUBRICATED  
WITHOUT DISASSEMBLY OR REQUIRE NO LUBRICATION?  
ARE IRREGULAR PROTRUSIONS (WAVE GUIDES, CABLES,  
HOSES, ETC.) EASILY REMOVEABLE FOR HANDLING AND  
MAINTENANCE?  
ARE BRACES PROVIDED TO HOLD HINGED ASSEMBLIES IN  
AN OPEN POSITION FOR THE PERFORMANCE OF WORK ON  
THEM?  
ARE UNITS DESIGNED TO PREVENT DAMAGE TO DELICATE  
PARTS DURING MAINTENANCE/REPAIR?  
IS FOLD-OUT CONSTRUCTION OF UNITS PROVIDED WHERE-  
EVER FEASIBLE?  
ARE RESTS AND STANDS PROVIDED FOR ALL APPLICABLE  
UNITS?  
DO RESTS AND STANDS INCORPORATE PROVISIONS FOR  
TEST EQUIPMENT, TOOLS AND MANUALS WHERE FEASIBLE?  
ARE RESTS OR STANDS A PART OF THE BASIC CHASSIS  
WHERE DESIGN REQUIREMENTS PERMIT?  
ARE GUIDES, TRACKS, AND STOPS PROVIDED TO PREVENT  
DAMAGE AND TO FACILITATE HANDLING OF UNITS AND  
COMPONENTS, WHERE FEASIBLE?  
ARE PHYSICAL MEASURES PROVIDED TO PRECLUDE THE  
INTERCHANGE OF UNITS OF SAME OR SIMILAR FORM THAT  
ARE NOT, IN FACT FUNCTIONALLY INTERCHANGEABLE?  
ARE PHYSICAL MEASURES PROVIDED TO PRECLUDE THE  
IMPROPER MOUNTING OF UNITS OR COMPONENTS?  
ARE MEASURES PROVIDED TO FACILITATE THE IDENT-  
IFICATION OF INTERCHANGEABLE UNITS OR COMPONENTS?  
ARE COMPONENTS AND ASSEMBLIES DESIGNED SUCH THAT  
THEY CAN ONLY BE INSTALLED IN THE CORRECT POSITION?  
ARE CENTERS OF GRAVITY OF HARDWARE KEPT AS LOW AS  
POSSIBLE?  
ARE LIGHT WEIGHT, EFFICIENTLY DESIGNED COMPONENTS  
UTILIZED THAT DO NOT JEOPARDIZE THE REQUIRED  
STRENGTH CHARACTERISTICS OF THE END ITEM?  
ARE MOISTURE AND FUNGUS-RESISTANT MATERIALS USED  
WHENEVER POSSIBLE AND PRACTICAL?  
HAVE CRITICAL SURFACES BEEN TREATED WITH PERMANENT  
OR SEMI-PERMANENT FINISHES?  
HAVE FUNGUS-PROOFING AND WATER-PROOFING COMPOUNDS  
BEEN APPLIED WHEN APPROPRIATE?  
FOR ITEMS CONTAINING CRITICAL PARTS/MECHANISMS THAT  
REQUIRE PROTECTIVE ENCLOSURES, ARE THE CASES OR  
OUTER SHELLS WATER/VAPOR PROOF TO ELIMINATE THE  
NEED FOR SUPPLEMENTAL PRESERVATION?  
HAS THE USE OF CANTILEVER MOUNTINGS FOR PARTS AND  
ASSEMBLIES BEEN MINIMIZED AND, WHERE USED, IS THE  
CENTER OF GRAVITY NEAR THE MOUNTING?  
HAS THE CENTER OF GRAVITY BEEN CONSIDERED IN THE  
POSITIONING OF SHOCK MOUNTS?

HAVE SHOCK MOUNTS BEEN POSITIONED TO PROVIDE AN APPROX-  
IMATELY EQUAL DISTRIBUTION OF WEIGHT TO ALL MOUNTING  
POINTS?

HAS SEQUENTIAL ASSEMBLY BEEN MINIMIZED TO REDUCE

EA027*	INVOLVED DISSASSEMBLY TO MAKE REPAIRS OR ADJUSTMENTS?
EA027*	HAS THE NUMBER OF VARIABLE DEVICES BEEN MINIMIZED, COMMENSURATE WITH DESIGN REQUIREMENTS?
EA028 L4/5-53	
EA028*	
EA029 L4/5-53	HAS THE SIMPLEST ELECTRICAL/ELECTRONIC DESIGN BEEN UTILIZED THAT WILL PERFORM THE REQUIRED FUNCTIONS?
EA030 L4/5-53	HAS MAXIMUM USE BEEN MADE OF STANDARD "PREFERRED" CIRCUITS?
EA030*	
EA031 L4/5-53	HAS THE SIMPLEST MECHANICAL DESIGN BEEN UTILIZED THAT WILL PERFORM THE REQUIRED FUNCTIONS?
EA032 L4/5-51	HAVE STANDARD MATERIALS BEEN UTILIZED IN ALL POSSIBLE CASES?
EA032*	
EA033 L4/5-51	HAVE CORROSION-RESISTANT MATERIALS BEEN UTILIZED WHEN REQUIRED?
EA033*	

#### COMPONENT LOCATION AND ORIENTATION

EA101 A3/DN2G3/P2.1.A	HAVE PARTS BEEN MOUNTED IN AN ORDERLY WAY ON FLAT SURFACES AND NOT STACKED ON TOP OF EACH OTHER?
EA101*	
EA102 A3/DN2G3/P2.1.B	HAVE PARTS BEEN MOUNTED ON ONE SIDE OF A BOARD AND ALL WIRING INCLUDING PRINTED CIRCUITS PUT ON THE OTHER SIDE OF THE BOARD?
EA102*	
EA103 A3/DN2G3/P2.1.C	HAVE PARTS BEEN POSITIONED TO PROVIDE SPACE TO USE PROBES, SOLDERING IRONS ETC. WITHOUT DIFFICULTY?
EA103*	
EA104 A3/DN2G3/P2.1.D	CAN SUBASSEMBLIES AND OTHER PARTS BE REPLACED WITHOUT REMOVAL OR INTERFERENCE FROM ADJACENT PARTS?
EA104*	
EA105 A3/DN2G3/P2.1.E	CAN FUSES BE SEEN AND REPLACED WITHOUT THE REMOVAL OF OTHER PARTS AND WITHOUT THE USE OF TOOLS?
EA105*	
EA106 A3/DN2G3/P2.1.F	ARE DELICATE COMPONENTS LOCATED SUCH THAT THEY WILL NOT BE DAMAGED WHILE WORK IS BEING PERFORMED ON THE UNIT?
EA106*	
EA107 A3/DN2G3/P2.1.G	HAVE INTERNAL CONTROLS BEEN LOCATED AWAY FROM DANGEROUS VOLTAGES?
EA107*	
EA108 A3/DN2G3/P2.1.H	HAVE COMPONENTS THAT RETAIN HEAT OR ELECTRICAL POTENTIAL AFTER EQUIPMENT HAS BEEN DEENERGIZED BEEN LOCATED TO PRECLUDE BEING CONTACTED BY THE REPAIRMAN WHEN THE EQUIPMENT IS FIRST OPENED?
EA108*	
EA108*	
EA109 B2/152/P5.9.2.2	ARE COMPONENTS OF THE SAME OR SIMILAR FORM BUT WITH DIFFERENT FUNCTIONAL PROPERTIES EASILY IDENTIFIED AND NOT INTERCHANGEABLE?
EA110 A2/DN2E2/P1.5	ARE INTERIOR MOUNTING AND INSTALLATION HARDWARE OF ADEQUATE STRENGTH AND DESIGN TO WITHSTAND STRESSES ENCOUNTERED DURING HANDLING AND MOVEMENT?
EA110*	
EA110*	
EA111 A2/DN2E2/P1.19	ARE LARGE, HEAVY OR DENSE INTERIOR COMPONENTS LOCATED AS NEAR THE BASE OR BOTTOM OF THE ITEM AS PRACTICAL?
EA111*	
EA111*	
EA112 L1/96/26	ARE HIGH FAILURE RATE COMPONENTS READILY ACCESSIBLE FOR REPLACEMENT?
EA112*	
EA113 L4/5-49	ARE PARTS ARRANGED FOR ECONOMICAL ASSEMBLY AND LOGICAL WIRING?
EA113*	
EA114 L6/19/10	ARE UNITS LAID OUT TO MINIMIZE THE OPERATOR'S MOVEMENTS DURING CHECKOUT?
EA114*	

#### CASES, COVERS, HANDLES, RACKS AND CHASSIS

EA201 A3/DN2G3/P2.4	ARE COVERS EASILY OPENED OR REMOVED FOR ACCESS TO INTERIOR COMPONENTS OF A UNIT IN ITS INSTALLED POSITION?
EA201*	
EA201*	
EA202 A3/DN2G3/P2.4.1.A	ARE COVERS AND CASES DESIGNED FOR REMOVAL RATHER THAN HAVING TO LIFT UNITS OUT OF THEM?
EA202*	
EA203 B2/154/P5.9.6.1	ARE MOUNTING SCREW HOLES OF SUFFICIENT SIZE TO PERMIT CASE ATTACHMENT TO THE UNIT WITHOUT PERFECT ALIGNMENT BETWEEN THE TWO ITEMS?
EA203*	
EA203*	
EA204 B2/154/P5.9.6.2	ARE EDGES AND CORNERS ON CASES AND COVERS ROUNDED OR OTHERWISE FINISHED TO PREVENT INJURY TO PERSONNEL?
EA204*	
EA204*	
EA205 B2/154/P5.9.7.1	HAS THE PROPER ORIENTATION OF A UNIT WITHIN ITS CASE BEEN IDENTIFIED EITHER BY CASE DESIGN OR BY THE USE OF APPROPRIATE LABELS?
EA205*	
EA205*	
EA206 B2/154/P5.9.7.3	ARE CASES SUFFICIENTLY LARGE TO ACCOMMODATE THEIR



EA206+	INSTALLATION AND REMOVAL WITHOUT DAMAGE TO THE UNIT THEY ENCLOSE?
EA206+	ARE CASES EQUIPPED WITH GUIDES, TRACKS, AND STOPS AS NECESSARY TO FACILITATE HANDLING AND PREVENT DAMAGE TO THE UNIT THEY ENCLOSE?
EA207 B2/154/P5.9.7.4	ARE OBVIOUS METHODS PROVIDED TO INDICATE WHEN A COVER IS NOT SECURED, EVEN THOUGH IT MAY BE IN PLACE?
EA207+	IS AN INSTRUCTION PLATE PROVIDED WHEN THE METHOD FOR OPENING A COVER IS NOT OBVIOUS?
EA207+	ARE NO MORE THAN SIX FASTENERS USED TO SECURE A CASE?
EA208 B2/154/P5.9.8.1	ARE THE SAME TYPE OF FASTENERS USED ON ALL COVERS AND CASES FOR A GIVEN TYPE OF EQUIPMENT?
EA208+	ARE VENTILLATION HOLES ADEQUATELY SCREENED TO PREVENT ENTRY OF CONDUCTORS THAT COULD INADVERTENTLY CONTACT HIGH VOLTAGES?
EA208+	ARE HANDLES USED ON UNITS WEIGHING OVER TEN POUNDS?
EA209 C1/23-17/T23-2.5C	ARE HANDLES PROVIDED ON SMALLER UNITS THAT ARE DIFFICULT TO GRASP, REMOVE, OR HOLD?
EA209+	ARE HANDLES PROVIDED ON TRANSIT CASES TO FACILITATE HANDLING AND CARRYING OF THE UNIT?
EA210 C1/23-17/T23-2.7C	ARE HANDLES POSITIONED TO PROVIDE A BALANCED LOAD?
EA210+	ARE THE INSIDE DIMENSIONS OF HANDLES AT LEAST 4.5 INCHES WIDE AND 2 INCHES DEEP?
EA211 C1/23-17/T23-2.8C	DO HANDLES HAVE A COMFORTABLE GRIP FOR REMOVAL AND REPLACEMENT OF UNITS?
EA211+	ARE HANDLES LOCATED SUCH THAT THEY DO NOT INTERFERE WITH SURROUNDING HARDWARE?
EA212 C1/23-17/T23-2.9C	ARE HANDLES LOCATED TO PREVENT ACCIDENTAL ACTIVATION OF CONTROLS?
EA212+	CAN HANDLES ALSO SERVE AS MAINTENANCE STANDS FOR THE EQUIPMENT?
EA213 C1/23-16/T23-2.1H	ARE HANDLES ADEQUATE ON HEAVY EQUIPMENT REQUIRING TWO MEN TO LIFT?
EA214 C1/23-16/T23-2.2H	ARE HANDLES OR OTHER SUITABLE MEANS PROVIDED ON ALL UNITS REQUIRING REMOVAL/REPLACEMENT?
EA214+	ARE HANDLES LOCATED NEAR THE BACK OF HEAVY EQUIPMENT TO FACILITATE HANDLING?
EA215 C1/23-16/T23-2.3H	ARE COVERS AND CASES REMOVEABLE/REPLACEABLE/PORTABLE BY ONE MAN?
EA215+	DO SIMILAR COVERS OPERATE ALIKE BUT ARE NOT INTERCHANGEABLE?
EA216 C1/23-16/T23-2.4H	ARE LIKE COVERS AND THEIR FASTENERS COMPLETELY INTERCHANGEABLE?
EA217 C1/23-16/T23-2.5H	ARE CAPTIVE, QUICK OPENING FASTENERS USED WHEREVER PRACTICAL?
EA217+	ARE NONREMOVABLE COVERS/CASES SELFSUPPORTING WHILE OPEN?
EA218 C1/23-16/T23-2.6H	ARE INSTRUCTIONS FOR COVERED UNITS READABLE WITH THE COVER OPEN?
EA218+	ARE COVERS/CASES DESIGNED WITH TOP SURFACES SMOOTH AND SLOPED TO REDUCE THE ACCUMULATION OF DUST/DIRT?
EA219 C1/23-16/T23-2.7H	ARE RACKS UNIFORM IN SIZE, DIVISION AND USE CHARACTERISTICS?
EA219+	ARE RACK DISPLAYS LOCATED BETWEEN 40 AND 70 INCHES FROM THE FLOOR?
EA220 C1/23-16/T23-2.9H	ARE RACK CONTROLS LOCATED BETWEEN 40 AND 55 INCHES FROM THE FLOOR?
EA220+	ARE REPLACEABLE ITEMS THAT WEIGH OVER 25 POUNDS LOCATED 51 INCHES OR LESS ABOVE THE FLOOR?
EA221 C1/23-16/T23-2.10H	CAN DOORS AND DRAWERS BE OPENED WITH ONE HAND AND WITH LESS THAN 40 POUNDS FORCE?
EA221+	DO ADJACENT HINGED DOORS/COVERS OPEN IN OPPOSITE DIRECTIONS?
EA222 C1/23-16/T23-2.11H	ARE GUIDES, SUPPORTS, AND LABELS PROVIDED AS AIDS
EA222+	
EA223 C1/23-16/T23-2.12H	
EA223+	
EA224 C1/23-16/T23-2.9H	
EA224+	
EA225 11/157/1	
EA225+	
EA226 11/157/12	
EA226+	
EA227 11/157/11	
EA227+	
EA228 11/157/14	
EA228+	
EA229 11/157/17	
EA229+	
EA230 11/157/18	
EA230+	
EA231 11/157/20	
EA231+	
EA232 11/168/1	
EA232+	
EA233 11/168/2	
EA233+	
EA234 11/168/3	
EA234+	
EA235 11/168/4	
EA235+	
EA236 11/168/5	
EA236+	
EA237 11/168/6	
EA237+	
EA238 11/168/15	



EA238+  
 EA239 11/168/13  
 EA239+  
 EA240 11/168/18  
 EA240+  
 EA241 11/168/19  
 EA241+  
 EA242 11/168/21  
 EA243 11/168/22  
 EA243+  
 EA244 11/168/25  
 EA244+  
 EA245 A1/8-9/1  
 EA245+  
 EA246 A1/8-9/5  
 EA246+  
 EA246+  
 EA247 A1/8-9/16  
 EA247+  
 EA248 A1/8-10/4  
 EA248+  
 EA249 A1/8-10/5  
 EA249+  
 EA250 A3/DN2G3/P2.4.3.E  
 EA250+  
 EA250+  
 EA251 A3/DN2G3/P2.4.3.I  
 EA251+  
 EA251+  
 EA252 A3/DN2G3/P2.4.3.J  
 EA252+  
 EA253 L6/15/PC.7  
 EA253+  
 EA254 L4/5-46  
 EA254+  
 EA255 L4/5-46  
 EA255+  
 EA256 L4/5-52  
 EA256+

IN REMOVING/REPLACING HEAVY ITEMS?  
 ARE INTERLOCKS PROVIDED TO DISCONNECT HAZZARDOUS  
 ITEMS ON RACKS OR CHASSIS?  
 ARE ALL DOORS, DRAWERS, AND ACCESSES TO RACKS  
 CLOSED DURING NORMAL OPERATIONS?  
 ARE ALL UNITS LAHELED WITH FULL IDENTIFYING  
 INFORMATION?  
 ARE STATUS LIGHTS AND LAMP TEST FEATURES PROVIDED?  
 ARE ALL MAINTENANCE CONTROLS/DISPLAYS LOCATED  
 BEHIND THE ACCESS DOORS?  
 ARE METERS/CLOCKS PROVIDED FOR REPORTING OPERATING  
 TIME?  
 ARE RACKS DESIGNED WITH MOVEABLE DRAWERS OR SHELVES  
 TO FACILITATE MAINTENANCE?  
 ARE DRAWERS AND RACKS DESIGNED TO OPEN WITHOUT  
 BREAKING INTERNAL CONNECTIONS REQUIRED FOR  
 MAINTENANCE?  
 ARE DRAWERS AND RACKS DESIGNED WITH HINGES OR  
 ROTATION POINTS FOR EASE OF ACCESS?  
 ARE LARGE PLUG-IN ITEMS SECURED WITH EASY-TO-  
 RELEASE HOLDING CLAMPS?  
 ARE HEAVY PARTS LOCATED AS CLOSE AS POSSIBLE TO  
 THE LOAD-BEARING STRUCTURE?  
 ARE BULKY UNITS WEIGHING 100 POUND AND OTHER UNITS  
 WEIGHING MORE THAN 150 POUNDS PROVIDED WITH  
 SUITABLY MARKED LIFTING EYES?  
 ARE NONSLIP GRASPING SURFACES PROVIDED ON THE  
 BOTTOM OF UNITS WHERE THAT SURFACE IS USED AS A  
 HANDHOLD DURING REMOVAL OR INSTALLATION?  
 DO HINGED OR FOLDING HANDLES HAVE A STOP POSITION  
 FOR RETAINING THEM IN THE "USE" POSITION?  
 ARE HINGED COVERS USED TO REDUCE THE NUMBER OF  
 REQUIRED FASTENERS, WHERE APPROPRIATE?  
 ARE FIELD-REPLACEABLE PARTS, MODULES, AND SUB-  
 ASSEMBLIES PLUG-IN TYPE RATHER THAN SOLDERED?  
 ARE OPENINGS IN CASES, COVERS, RACKS, ETC SHIELDED  
 TO PREVENT LEAKAGE?  
 HAVE GLARE HAZZARDS BEEN MINIMIZED IN THE DESIGN  
 OF THE EQUIPMENT?

#### PACKAGING/MODULARIZATION

EA301 C1/23-15/T23-2.1  
 EA302 C1/23-15/T23-2.2  
 EA302+  
 EA303 C1/23-15/T23-2.3  
 EA304 C1/23-15/T23-2.4  
 EA305 C1/23-15/T23-2.5  
 EA305+  
 EA305+  
 EA306 C1/23-15/T23-2.6  
 EA306+  
 EA307 C1/23-15/T23-2.9  
 EA308 C1/23-15/T23-2.10  
 EA309 C1/23-15/T23-2.12  
 EA309+  
 EA310 C1/23-15/T23-2.15  
 EA311 C1/23-15/T23-2.16  
 EA311+  
 EA312 C1/23-15/T23-2.19  
 EA312+  
 EA313 C1/23-15/T23-2.20  
 EA313+  
 EA314 C1/23-15/T23-2.21  
 EA315 C1/23-15/T23-2.22  
 EA315+  
 EA316 C1/23-15/T23-2.28  
 EA316+  
 EA317 L6/12/PA.1

ARE PLUG-IN COMPONENTS USED WHERE FEASIBLE?  
 HAVE METHODS BEEN PROVIDED TO PREVENT THE WRONG  
 INSTALLATION OF A UNIT?  
 ARE MODULES AND MOUNTING PLATES IDENTIFIED?  
 ARE GUIDES PROVIDED FOR MODULE INSTALLATION?  
 CAN IN-SERVICE ADJUSTMENTS BE MADE ON PULL-OUT/  
 SLIDE-OUT UNITS WITHOUT REMAKING ELECTRICAL  
 CONNECTIONS?  
 ARE UNITS MOUNTED SO THAT REPLACING ONE DOES NOT  
 REQUIRE THE REMOVAL OF OTHERS?  
 ARE EASILY DAMAGED COMPONENTS ADEQUATELY PROTECTED?  
 ARE ALL REPLACEABLE PARTS EASILY ACCESSIBLE?  
 ARE BRACES PROVIDED TO HOLD HINGED ASSEMBLIES IN  
 THE OPEN POSITION WHILE BEING MAINTAINED?  
 ARE INTERNAL DISPLAYS ILLUMINATED AS NECESSARY?  
 ARE INTERNAL CONTROLS LOCATED AWAY FROM DANGEROUS  
 VOLTAGES?  
 ARE UNITS DESIGNED WITH ADEQUATE SPACE FOR THE USE  
 OF TOOLS?  
 ARE UNITS DESIGNED WITH ADEQUATE CLEARANCE SO THAT  
 STRUCTURAL MEMBERS DO NOT PREVENT ACCESS?  
 ARE ALL THROWAWAY ITEMS READILY ACCESSIBLE?  
 ARE UNITS DESIGNED SUCH THAT TROUBLESHOOTING OF A  
 MAJOR COMPONENT DOES NOT REQUIRE ITS REMOVAL?  
 ARE UNITS REMOVEABLE ALONG A STRAIGHT OR MODERATELY  
 CURVED LINE?  
 ARE A MAXIMUM NUMBER OF UNITS DESIGNED FOR REMOVAL

FA317+  
 FA318 L6/12/PA.3  
 FA318+  
 FA319 L6/12/PA.5  
 FA319+  
 FA320 A3/DN2G1/P3.C  
 FA321 A3/DN2G1/P3.D  
 FA321+  
 FA321+  
 FA322 I1/165/4  
 FA323 I1/165/5-16  
 FA323+  
 FA323+  
 FA324 I1/165/7  
 FA324+  
 FA325 I1/165/8  
 FA326 I1/165/9  
 FA326+  
 FA327 I1/165/11  
 FA327+  
 FA328 I1/165/12  
 FA328+  
 FA329 I1/165/19  
 FA329+  
 FA330 I1/165/20  
 FA330+  
 FA331 I1/165/22  
 FA331+  
 FA332 I1/165/25  
 FA332+  
 FA333 I1/166/3  
 FA333+  
 FA334 I1/166/4  
 FA334+  
 FA335 I1/166/8  
 FA335+  
 FA336 I1/166/10  
 FA336+  
 FA337 I1/166/12  
 FA337+  
 FA338 I1/166/13  
 FA338+  
 FA339 I1/166/16  
 FA339+  
 FA340 I1/166/17  
 FA340+  
 FA341 A1/8-13/1  
 FA341+  
 FA342 A1/8-13/9  
 FA342+  
 FA343 A1/8-13/10  
 FA343+  
 FA344 A1/8-13/11  
 FA345 L4/5-45  
 FA345+  
 FA345+

AND REPLACEMENT BY ONE PERSON?  
 ARE UNITS SERVING THE SAME FUNCTION IN DIFFERENT APPLICATIONS DESIGNED TO BE INTERCHANGEABLE?  
 ARE FUNCTIONS GROUPED SO THAT IT IS POSSIBLE TO CHECK AND ADJUST EACH UNIT SEPARATELY?  
 ARE ALL TEST POINTS EASILY ACCESSIBLE?  
 ARE THE UNITS DESIGNED WITH SELF-CHECKING FEATURES OR ARE TEST POINTS PROVIDED FOR CHECKING WITH AUXILIARY EQUIPMENT?  
 ARE MODULES DESIGNED TO PERFORM A SINGLE FUNCTION?  
 ARE MODULES PACKED TO THE GREATEST PRACTICAL DENSITY BUT WITH ADEQUATE WORKSPACE FOR BENCH MAINTENANCE?  
 DOES MODULE DESIGN COMPLY WITH PLANNED DIAGNOSTIC CAPABILITIES?  
 ARE MODULES TESTED AS UNITS ON A GO/NO-GO BASIS?  
 HAS ENCAPSULATION OR POTTING BEEN AVOIDED AROUND UNREPAIRABLE PARTS ON REPAIRABLE MODULES?  
 ARE LIKE MODULES INTERCHANGEABLE WITHOUT REALIGNMENT?  
 ARE SIMILAR MODULES WITH DIFFERENT FUNCTIONS NOT INTERCHANGEABLE?  
 HAS A SYSTEM-CONSISTENT COLOR CODE BEEN ESTABLISHED TO DISCRIMINATE BETWEEN SIMILAR MODULES?  
 HAVE CODES/TAGS BEEN PROVIDED TO IDENTIFY AND OUTLINE FUNCTIONAL GROUPS OF ITEMS?  
 ARE TEST AND SERVICE POINTS, AND THEIR VALUES AND LIMITS ALL LABELED?  
 ARE STANDARDIZED, PREFERRED CIRCUITS USED FOR ALL ROUTINE FUNCTIONS?  
 ARE DELICATE ITEMS PROTECTED AGAINST DAMAGE OR MISUSE?  
 ARE COMPONENTS SEGREGATED BY MAINTENANCE TASKS AND SKILLS?  
 ARE LIKE ITEMS GROUPED TOGETHER AND MOUNTED IN A UNIFORM FASHION?  
 IS THE MANNER IN WHICH A MODULE IS MOUNTED ALWAYS OBVIOUS?  
 ARE ITEMS CLEANED BY DIFFERENT METHODS SEPARATED SO THAT THEY CAN BE PROTECTED?  
 ARE HIGH FAILURE RATE AND SERVICABLE ITEMS READILY ACCESSIBLE?  
 HAS THE SEQUENTIAL ASSEMBLY/DISASSEMBLY OF UNITS BEEN AVOIDED?  
 ARE ALL PLUG-IN SOCKETS AND KEYS ORIENTED IN THE SAME DIRECTION?  
 ARE MODULES DESIGNED IN UNIFORM SIZES AND SHAPES WHERE PRACTICAL?  
 ARE GUIDE PINS PROVIDED TO PERMIT EASY INSERTION OF MODULES INTO CONNECTORS?  
 ARE QUICK DISCONNECT HOLD-DOWN DEVICES USED ON MODULES TO PERMIT EASY REMOVAL?  
 ARE REPAIRABLE MODULES DESIGNED FOR EASY ACCESS?  
 ARE MODULES DESIGNED WITH INTERCONNECTING CIRCUITS LOCATED IN THE SAME PACKAGE FOR EASE IN PERFORMING MAINTENANCE?

#### STANDARDIZATION

FA401 B2/15/P4.2  
 FA401+  
 FA401+  
 FA402 B2/15/P5.9.1.1  
 FA402+  
 FA403 B2/15/P5.9.1.10  
 FA403+  
 FA403+  
 FA404 L6/1/PA.6  
 FA404+

ARE CONTROLS, DISPLAYS, MARKING, CODING, EQUIPMENT LAYOUT, ETC. UNIFORM FOR ALL COMMON FUNCTIONS PERFORMED BY THE EQUIPMENT?  
 ARE STANDARD PARTS INCORPORATED INTO THE EQUIPMENT DESIGN TO THE MAXIMUM FEASIBLE EXTENT?  
 HAVE STANDARDIZATION EFFORTS BEEN ACCOMPANIED BY PROVISIONS TO PRECLUDE IMPROPER MOUNTING AND INSTALLATION OF STANDARD EQUIPMENT?  
 HAS UNIFORMITY BEEN MAINTAINED AMONG LIKE UNITS MANUFACTURED BY DIFFERENT CONTRACTORS?

EA405 L4/5-38  
EA405+  
EA406 L4/5-38  
EA407 L4/5-55  
EA407+  
EA408 L4/5-55  
EA408+  
EA408+  
EA409 L4/5-55  
EA409+

WOULD REDESIGN PERMIT THE REPLACEMENT OF A NON-  
STANDARD PART WITH A STANDARD PART?  
ARE ALL NONSTANDARD PARTS COMPLETELY IDENTIFIED?  
HAS THE DESIGN BEEN COMPARED WITH SIMILAR DESIGNS  
TO OBTAIN OPTIMUM BENEFIT FROM PAST EXPERIENCE?  
HAS THE LOWEST COST STANDARD EQUIPMENT BEEN USED  
THAT WILL MEET THE REQUIRED OPERATING  
CHARACTERISTICS?  
HAS THE USE OF EACH NONSTANDARD ITEM BEEN  
ADEQUATELY JUSTIFIED?

# INTERCHANGEABILITY

FA001 C1/14-2/T14-1.1  
FA001+  
FA002 C1/14-2/T14-1.2  
FA002+  
FA003 C1/14-2/T14-1.3  
FA003+  
FA003+  
FA004 C1/14-2/T14-1.4  
FA004+

DOES FUNCTIONAL INTERCHANGEABILITY EXIST WHERE PHYSICAL INTERCHANGEABILITY IS POSSIBLE?  
DOES COMPLETE INTERCHANGEABILITY EXIST WHEREVER PRACTICAL?  
HAS SUFFICIENT INFORMATION BEEN PROVIDED TO ENABLE A USER TO ADEQUATELY DETERMINE WHETHER TWO SIMILAR PARTS ARE INTERCHANGEABLE?  
ARE CHANGES IN SIZE, SHAPE AND MOUNTING UTILIZED TO REFLECT FUNCTIONAL DIFFERENCES BETWEEN SIMILAR UNITS?

FA005 C1/14-2/T14-1.5  
FA005+  
FA005+  
FA006 C1/14-2/T14-1.6  
FA006+  
FA007 C1/14-2/T14-1.7  
FA007+  
FA008 C1/14-2/T14-1.8  
FA008+  
FA009 C1/14-2/T14-1.9  
FA009+  
FA010 C1/14-2/T14-1.10  
FA010+  
FA011 C1/14-2/T14-1.13  
FA011+  
FA011+  
FA011+  
FA012 A1/8-20/T8-13.2  
FA012+  
FA013 A1/8-20/T8-13.5  
FA013+  
FA014 A1/8-20/T8-13.7  
FA014+  
FA015 L4/5-46  
FA015+  
FA016 L4/5-46  
FA016+  
FA017 L4/5-42  
FA017+

DOES COMPLETE INTERCHANGEABILITY EXIST FOR ALL ITEMS SERVING THE SAME FUNCTION IN DIFFERENT APPLICATIONS?  
DO MOUNTING HOLES AND BRACKETS ACCOMMODATE UNITS OF THE SAME TYPE BUILT BY DIFFERENT MANUFACTURERS?  
ARE IDENTICAL PARTS USED WHEREVER POSSIBLE IN SIMILAR EQUIPMENT OR A SERIES OF A GIVEN TYPE?  
ARE PARTS, FASTENERS, CONNECTORS, ETC. STANDARDIZED THROUGHOUT THE SYSTEM?  
ARE CABLE HARNESSES DESIGNED SO THAT THEY CAN BE PREFABRICATED AND INSTALLED AS A UNIT?  
IS COMPLETE ELECTRICAL AND MECHANICAL INTERCHANGEABILITY PROVIDED ON ALL LIKE REMOVABLE COMPONENTS?  
WHEN COMPLETE INTERCHANGEABILITY IS NOT PRACTICAL, ARE UNITS DESIGNED FOR FUNCTIONAL INTERCHANGEABILITY AND ADAPTERS PROVIDED FOR PHYSICAL INTERCHANGEABILITY, WHEREVER PRACTICAL?  
ARE ALL COMPONENTS HAVING THE SAME PART NUMBER DIRECTLY AND COMPLETELY INTERCHANGEABLE?  
ARE ALL BOLTS, SCREWS, FASTENERS, ETC. THE SAME SIZE FOR COVERS/CASES FOR A GIVEN EQUIPMENT?  
CAN PARTS REPLACEMENT BE ACCOMPLISHED WITH STANDARD TOOLS?  
ARE PLUGS/RECEPTACLES KEYED TO PREVENT IMPROPER CONNECTIONS?  
ARE PLUG-IN BOARDS KEYED TO PREVENT IMPROPER INSTALLATION?  
ARE PRINTED CIRCUIT BOARDS KEYED TO PREVENT THEIR INTERCHANGE IN A UNIT?

# IDENTIFICATION/MARKING

GA001 C1/13-9/T13-4.1	ARE ALL UNITS MARKED WITH FULL IDENTIFYING DATA?
GA002 C1/13-9/T13-4.2	ARE PARTS MARKED WITH RELEVANT CHARACTERISTICS DATA?
GA002+	ARE STRUCTURAL MEMBERS MARKED WITH PHYSICAL COMPOSITION DATA?
GA003 C1/13-9/T13-4.3	IS EACH TERMINAL MARKED WITH THE SAME CODE SYMBOL AS THE WIRE ATTACHED TO IT?
GA003+	ARE LABELS ON COMPONENTS OR CHASSIS ETCHED OR EMBOSSED RATHER THAN STAMPED OR PRINTED?
GA004 C1/13-9/T13-4.4	ARE LABELS IN FULL UNOBSTRUCTED VIEW?
GA004+	IS THE MEANING OF COLOR CODING PROVIDED IN MANUALS AND ON ONE OR MORE EQUIPMENT PANELS?
GA005 C1/13-9/T13-4.5	IS COLOR CODING CONSISTENT THROUGHOUT THE SYSTEM DESIGN?
GA005+	ARE NUMERALS AND LETTERS OF SIMPLE CONFIGURATION UTILIZED FOR ALL MARKINGS?
GA006 C1/13-9/T13-4.6	ARE CAPITAL LETTERS USED ON ALL MARKING LABELS?
GA007 C1/13-9/T13-4.7	IS STANDARD CAPITALIZATION AND LOWER CASE LETTERS USED FOR EXTENDED TEXT MATERIAL?
GA007+	IS THE QUALITY OF THE DISPLAY LABELS SUCH THAT THEY WILL NOT BE LOST, MUTILATED OR UNREADABLE?
GA008 C1/13-9/T13-4.8	DO LABELS CLEARLY INDICATE THE FUNCTIONAL RELATIONSHIPS OF DISPLAYS AND CONTROLS?
GA008+	ARE DISPLAYS LABELED BY FUNCTIONAL QUANTITY RATHER THAN OPERATIONAL CHARACTERISTICS?
GA009 C1/13-9/T13-4.9	DOES DISPLAYED PRINTED MATTER ALWAYS APPEAR UPRIGHT TO THE OPERATOR FROM HIS NORMAL VIEWING POSITION?
GA009+	DO LABELS APPEAR ON EVERY ITEM THE OPERATOR MUST RECOGNIZE, READ, OR MANIPULATE?
GA010 C1/13-9/T13-4.10	ARE NUMBERS DISPLAYED FOR THE SEQUENCE OF USE OF CONTROLS?
GA011 C1/13-9/T13-4.10	ARE LABELS ATTACHED TO EACH TEST POINT TO SHOW WHAT IS MEASURED AT THE POINT?
GA011+	ARE SCHEMATICS AND INSTRUCTIONS FOR TROUBLE SHOOTING AVAILABLE ON OR NEAR EACH UNIT?
GA012 C1/13-9/T13-4.11	DO DISPLAY LABELS ON COVERS PROVIDE RELEVANT CHARACTERISTICS OF THE UNIT?
GA012+	ARE DUPLICATE POSITION LABELS PROVIDED INTERNALLY WHEN UNITS ARE TO BE CHECKED WITH COVERS REMOVED?
GA013 C1/13-9/T13-4.12	ARE DISPLAY CODES EXPLICITLY IDENTIFIED ON OR NEAR THE LOCATIONS WHERE THEY ARE USED?
GA013+	ARE DISPLAYS LABELED SO THAT THEY CORRELATE WITH TECHNICAL DOCUMENTATION?
GA014 C1/13-9/T13-4.12	DO DISPLAY SCHEMATICS CLEARLY SHOW ANY RELATIONSHIPS TO OTHER SCHEMATICS?
GA014+	ARE COLOR CODES EASILY IDENTIFIABLE UNDER ALL ILLUMINATION CONDITIONS AND ARE THEY RESISTANT TO DAMAGE AND WEAR?
GA015 C1/13-9/T13-4.13	HAVE METHODS BEEN UTILIZED TO EMPHASIZE THE FUNCTIONAL ORGANIZATION FOR DISPLAYS AND CONTROLS?
GA015+	ARE ALL POTTED ITEMS ADEQUATELY LABELED?
GA016 C1/13-9/T13-4.14	ARE ALL STORAGE SPACES ADEQUATELY IDENTIFIED AND LABELED?
GA016+	ARE ALL REMOVABLE COVERS LABELED WITH PERMANENT PART NUMBERS?
GA017 C1/13-9/T13-4.15	ARE ALL LUBRICATION POINTS PROPERLY IDENTIFIED?
GA017+	ARE ALL CONTROLS LABELED TO SHOW DIRECTION OF MOVEMENT?
GA018 C1/13-9/T13-4.16	ARE ACCESSES LABELED AND IDENTIFIED ACCORDINGLY IN THE MAINTENANCE INSTRUCTIONS?
GA018+	ARE WARNING LABELS PROVIDED AT ALL ACCESSES WHERE
GA019 C1/13-9/T13-4.17	
GA019+	
GA020 C1/13-9/T13-4.18	
GA020+	
GA021 C1/13-9/T13-4.19	
GA021+	
GA022 C1/13-9/T13-4.20	
GA022+	
GA023 C1/13-9/T13-4.21	
GA023+	
GA024 C1/13-9/T13-4.22	
GA024+	
GA025 C1/13-9/T13-4.23	
GA025+	
GA025+	
GA026 C1/13-9/T13-4.24	
GA026+	
GA027 C1/13-9/T13-4.25	
GA027+	
GA028 C1/13-9/T13-4.26	
GA028+	
GA029 C1/13-9/T13-4.27	
GA029+	
GA030 C1/13-9/T13-4.28	
GA031 C1/13-9/T13-4.29	
GA031+	
GA032 A3/DN263/P4.4.R	
GA032+	
GA033 A3/DN263/P4.3.C	



GA033+  
 GA034 R2/91/P5.5.2.3  
 GA034+  
 GA035 R2/92/P5.5.3.2  
 GA035+  
 GA036 R2/92/P5.5.3.3  
 GA036+  
 GA037 R2/92/P5.5.4.1  
 GA037+  
 GA038 R2/92/P5.5.4.6  
 GA038+  
 GA039 A2/DN2E1/P1.3  
 GA039+  
 GA040 A2/DN2E1/P1.4  
 GA040+  
 GA041 A2/DN2E1/P1.33  
 GA041+  
 GA042 A2/DN2E1/P2.14  
 GA042+  
 GA043 A2/DN2E1/P3.1  
 GA043+  
 GA044 A2/DN2E1/P3.5  
 GA044+  
 GA045 A2/DN2E1/P3.6  
 GA045+  
 GA046 A2/DN2E1/P3.7  
 GA047 A2/DN2E1/P3.22  
 GA048 A2/DN2E2/P1.29  
 GA048+  
 GA049 A2/DN4F5/P2.12  
 GA050 A2/DN4F2/P2.1  
 GA051 A2/DN4F2/P2.1  
 GA051+.

HAZARDS MAY BE ENCOUNTERED?  
 ARE ALL LABELS LOCATED IN A CONSISTENT MANNER  
 THROUGHOUT THE EQUIPMENT/SYSTEM?  
 ARE ONLY STANDARD ABBREVIATIONS USED ON ALL  
 MARKINGS AND LABELS?  
 DOES ONLY RELEVANT INFORMATION APPEAR ON ALL  
 PLACARDS AND LABELS?  
 ARE ALL LABELS AS CONCISE AS POSSIBLE WITHOUT  
 DISTORTING THE MEANING OR INFORMATION?  
 DO LABEL COLORS CONTRAST WITH THE SURROUNDING  
 COLORS?  
 ARE WORDS AND SYMBOLS ON LABELS/PLACARDS SELECTED  
 FOR BREVITY AND FAMILIARITY TO THE GENERAL PUBLIC?  
 ARE TECHNICAL WORDS AND SYMBOLS SELECTED ON THE  
 BASIS THAT THEY WILL BE UNDERSTOOD BY THE OPERATOR?  
 ARE PLATES FOR LABELS/PLACARDS SECURELY AND  
 PERMANENTLY AFFIXED WITH SCREWS OR RIVETS?  
 ARE ALL FLUID LINES IDENTIFIED IN ACCORDANCE WITH  
 APPLICABLE MILITARY STANDARDS?  
 ARE ALL SERVICE POINTS IDENTIFIED BY LEGIBLE AND  
 DURABLE MARKINGS?  
 ARE PERMANENTLY ATTACHED WARNING PLATES THAT  
 OUTLINE PRECAUTIONARY MEASURES PROVIDED?  
 ARE SERVICING INSTRUCTION PLATES PROVIDED AS  
 REQUIRED?  
 ARE TANKS, DRAINS, ETC. ADEQUATELY LABELED?  
 ARE CONTAINERS PROPERLY AND ADEQUATELY MARKED?  
 ARE LOCATIONS FOR SUPPORTS, ATTACHMENTS, ETC.  
 ADEQUATELY MARKED?  
 ARE ALL GROUNDING JACKS ADEQUATELY MARKED?  
 ARE ALL BATTERY COMPARTMENTS ADEQUATELY IDENTIFIED?  
 ARE BATTERY SERVICE RECORDS KEPT ON, IN, OR NEAR  
 EACH COMPARTMENT?

# SAFETY

HA001 C1/15-9/T15-3.1	ARE GUARDS PROVIDED OVER ALL MOVING PARTS OF
HA001+	MACHINERY THAT MIGHT CAUSE INJURY?
HA002 C1/15-9/T15-3.2	ARE EDGES OF COMPONENTS AND ACCESS OPENINGS ROUNDED
HA002+	OR PROTECTED TO PREVENT INJURY?
HA003 C1/15-10/T15-3.18	ARE JACKING AND HOISTING POINTS CLEARLY IDENTIFIED?
HA004 C1/15-10/T15-3.22	ARE LIMIT STOPS PROVIDED ON DRAWERS AND PULLOUT
HA004+	ASSEMBLIES?
HA005 C1/15-10/T15-3.20	DO HATCHES HAVE A STRONG, POSITIVE, SIMPLE TO
HA005+	OPERATE LOCK FOR THE OPEN POSITION?
HA006 C1/15-10/T15-3.21	ARE STRUTS OR LATCHES PROVIDED TO SECURE HINGED OR
HA006+	SLIDING COMPONENTS AGAINST ACCIDENTAL MOVEMENT?
HA007 C1/15-10/T15-3.29	ARE COMPONENTS WITH HEAVY SPRINGS DESIGNED SO THAT
HA007+	THE SPRING CAN NOT BE INADVERTENTLY DISLODGED?
HA008 L6/4/PD.6	ARE SELF-LOCKING OR OTHER SAFETY DEVICES
HA008+	INCORPORATED INTO STANDS AND WORK PLATFORMS TO
HA008+	PREVENT ACCIDENTAL COLLAPSE?
HA009 L6/4/PD.7	ARE ANCHORS OR OUTRIGGERS PROVIDED ON STANDS WITH
HA009+	HIGH CENTERS OF GRAVITY?
HA010 L6/4/PD.9-.10	ARE HANDRAILS, CHAINS, SAFETY BARS, ETC. PROVIDED
HA010+	ON PLATFORMS, STAIRS, ETC. TO PREVENT FALLING?
HA011 L6/5/PD.17	ARE "NO STEP" MARKINGS PROVIDED WHERE APPLICABLE?
HA012 L6/6/PD.18	ARE WEIGHT CAPACITIES FOR STANDS, HOISTS, JACKS,
HA012+	ETC. CLEARLY INDICATED?
HA013 I1/169/8	ARE SAFETY DEVICES PROVIDED ON HOISTS, LIFTS,
HA013+	JACKS TO PREVENT LOADS BEING DROPPED IF POWER
HA013+	FAILS?
HA014 I1/169/7	ARE LIMIT SWITCHES AND INTERLOCKS PROVIDED TO
HA014+	PREVENT OVERTRAVEL ON LOAD CARRYING EQUIPMENT?
HA015 I1/169/13	ARE HEAVY ITEMS MOUNTED WITH A LOW CENTER OF
HA015+	GRAVITY FOR EASE OF HANDLING AND TO PREVENT
HA015+	TIPPING?
HA016 I1/169/14	ARE HEAVY ITEMS MOUNTED OVER OR NEAR LOAD BEARING
HA016+	STRUCTURES?
HA017 I1/169/15	ARE SUPPORTS, RETAINERS, SCREENS, ETC. PROVIDED
HA017+	TO PROTECT AGAINST FALLING OBJECTS?
HA018 L6/6/PD.21	ARE LINES CARRYING LIQUIDS AND GASSES CLEARLY MARKED
HA018+	AS TO CONTENTS, PRESSURE, TEMPERATURE, ETC.?
HA019 L6/6/PD.24	IS SKID PROOF MATERIAL PROVIDED ON ALL APPLICABLE
HA019+	SURFACES?
HA020 L6/5/PD.11	ARE AUTOMATIC SHUT-OFF DEVICES PROVIDED ON FUEL
HA020+	AND SERVICING EQUIPMENT TO PREVENT OVERFLOW AND
HA020+	SPILLAGE?
HA021 L6/5/PD.12	ARE PORTABLE FIRE EXTINGUISHERS PROVIDED IN AREAS
HA021+	WHERE FIRE HAZARDS MAY EXIST?
HA022 L6/5/PD.16	ARE AREAS OF OPERATION AND MAINTENANCE REQUIRING
HA022+	SPECIAL CLOTHING, TOOLS, OR EQUIPMENT ADEQUATELY
HA022+	IDENTIFIED?
HA023 L6/5/PD.14	IS FIRST AID EQUIPMENT READILY AVAILABLE IN AREAS
HA023+	WHERE TOXIC OR HARMFUL MATERIALS ARE HANDLED?
HA024 L6/5/PD.15	ARE PROVISIONS MADE TO NEUTRALIZE OR FLUSH HARMFUL
HA024+	MATERIALS SPILLED ON PERSONNEL OR EQUIPMENT?
HA025 L6/4/PD.4	ARE ALERTING DEVICES PROVIDED TO WARN PERSONNEL
HA025+	OF IMPENDING OR EXISTING HAZARDS?
HA026 C1/15-9/T15-3.5	ARE AUDIBLE WARNING SIGNALS DISTINCTIVE AND
HA026+	UNLIKELY TO BE OBSCURED BY OTHER NOISES?
HA027 C1/15-9/T15-3.6	ARE FAULT LOCATION SYSTEMS DESIGNED TO DETECT WEAK
HA027+	OR FAILING PARTS BEFORE AN EMERGENCY OCCURS?
HA027 C1/15-9/T15-3.7	ARE CRITICAL WARNING LIGHTS ISOLATED FROM OTHER
HA027+	LESS IMPORTANT LIGHTS FOR BEST EFFECTIVENESS?
HA028 C1/15-10/T15-3.8	ARE WARNING LIGHTS COMPATIBLE WITH THE EXPECTED
HA028+	AMBIENT ILLUMINATION LEVELS?
HA029 C1/15-10/T15-3.9	DO DISPLAYS THAT REQUIRE CONTINUOUS MONITORING BUT
HA029+	CAN NOT BE WATCHED CONTINUOUSLY HAVE A SUITABLE

HA029+	AUDITORY BACKUP WARNING DEVICE?
HA030 C1/15-10/T15-3.10	ARE REMOVABLE COVERS OR WINDOWS PROVIDED OVER FUSES SO THAT THEY CAN BE EASILY CHECKED?
HA030+	ARE OPERATING AND DANGER RANGES ADEQUATELY DEFINED ON DISPLAYS TO SIMPLIFY CHECKREADINGS?
HA031 C1/15-10/T15-3.11	ARE CONTROL CIRCUITS AND WARNING CIRCUITS DESIGNED SO THAT THEY ARE NEVER COMBINED?
HA031+	ARE ON-OFF OR FAIL-SAFE CIRCUITS UTILIZED WHEREVER POSSIBLE TO MINIMIZE FAILURES WITHOUT THE OPERATORS KNOWLEDGE?
HA032 C1/15-10/T15-3.12	ARE BLEEDING DEVICES PROVIDED ON ALL HIGH-ENERGY CAPACITORS INVOLVED IN MAINTENANCE/REPAIRS?
HA032+	ARE ALL NEUTRAL PARTS OF ELECTRICAL SYSTEMS GROUNDED FOR PERSONNEL PROTECTION?
HA033 C1/15-10/T15-3.13	ARE ELECTRICAL/ELECTROMECHANICAL SYSTEMS DESIGNED TO BE EXPLOSION PROOF WHERE APPLICABLE?
HA033+	ARE TOOLS AND EQUIPMENT USED AROUND COMBUSTIBLES NONSPARKING AND EXPLOSION PROOF?
HA034 C1/15-10/T15-3.14	ARE HAZARDS ADEQUATELY IDENTIFIED BY CONSPICUOUS LABELS/PLACARDS?
HA034+	DO SWITCHES OR CONTROLS WHICH INITIATE HAZARDOUS OPERATIONS REQUIRE PRELIMINARY ACTIONS BY THE OPERATOR BEFORE THEY CAN BE UTILIZED?
HA035 C1/15-10/T15-3.15	ARE SAFETY INTERLOCKS USED WHEREVER NECESSARY?
HA035+	ARE ADJUSTMENTS AND COMMONLY REPLACED PARTS LOCATED AWAY FROM HIGH VOLTAGES OR HOT UNITS?
HA036 C1/15-10/T15-3.16	
HA036+	
HA037 C1/15-10/T15-3.17	
HA037+	
HA038 C1/15-10/T15-3.23	
HA038+	
HA039 C1/15-10/T15-3.24	
HA039+	
HA040 C1/15-10/T15-3.27	
HA041 C1/1K-10/T15-3.31	
HA041+	
HA042 C1/15/10/T15-3.35	HAVE MATERIALS BEEN USED THAT DO NOT PRODUCE HAZARDOUS ENVIRONMENTS UNDER SEVERE OPERATING CONDITIONS (E.G., TAFLOX PRODUCES A POISONOUS GAS UNDER HIGH TEMPERATURE CONDITIONS?)
HA043 C1/15-10/T15-3.37	ARE WARNING LIGHTS PROVIDED TO INDICATE FIRE OR EXCESSIVE HEAT IN AREAS NOT VISIBLE TO OPERATORS?
HA043+	ARE INTERNAL CONTROLS/SWITCHES LOCATED AWAY FROM HAZARDS?
HA044 I1/169/2	ARE ELECTRICAL RECEPTICLES "HOT" AND PLUGS "COLD" WHEN DISCONNECTED?
HA044+	CAN SOURCES OF DANGER BE SHUT OFF AND LOCKED UNDER CONTROL OF THE TECHNICIAN?
HA045 I1/169/3	ARE TOOL GUIDES PROVIDED IN WORK AREAS DANGEROUS TO REACH?
HA045+	ARE PROTECTIVE DEVICES (FUSES, CIRCUIT BREAKERS, ETC) INCORPORATED INTO ALL CIRCUITS WHERE DAMAGE MAY OCCUR IN CASE OF A MALFUNCTION?
HA046 I1/169/12	HAVE LOCAL SAFETY SWITCHES BEEN PROVIDED AT ALL ROTATING ANTENNAS?
HA046+	HAS PROTECTION BEEN PROVIDED AGAINST THE POSSIBLE IMPLOSION OF CATHODE-RAY TUBES?
HA047 I1/169/22	HAVE SHOCK MOUNTS BEEN BYPASSED WITH GROUNDING STRAPS?
HA047+	HAS INSULATION/PROTECTIVE FINISH BEEN REMOVED WHERE METAL TO METAL CONTACT IS REQUIRED?
HA048 C1/81/18	ARE WARNING DEVICES ACTIVATED BY THE CRITICAL POSITION OF SWITCHES OR CONTROLS WHICH INITIATE HAZARDOUS OPERATIONS?
HA048+	ARE AREAS FOR THE TRANSFER AND HANDLING OF COMBUSTIBLES ISOLATED FROM OTHER WORK AREAS?
HA049 A1/8-19/F8-12.4	HAS ADEQUATE PROTECTION AGAINST NUCLEAR HAZARDS BEEN PROVIDED?
HA049+	ARE BATTERY COMPARTMENTS VENTED AS REQUIRED?
HA050 A1/8-19/F8-12.2	ARE UNITS LOCATED AND MOUNTED SO THAT ACCESS TO THEM MAY BE ACHIEVED WITHOUT DANGER TO PERSONNEL FROM ELECTRICAL CHARGE, HEAT, SHARP EDGES, POINTS, MOVING PARTS, CHEMICALS AND OTHER CONTAMINANTS?
HA050+	HAS ADEQUATE PROTECTION BEEN PROVIDED AGAINST TOXIC FUMES?
HA051 L4/5-46	
HA051+	
HA052 L4/5-46	
HA052+	
HA053 L6/4/PD.3	
HA053+	
HA054 C1/16-9/T16-3.4	
HA054+	
HA055 C1/3-4/T3-1.52	
HA055+	
HA056 C1/3-4/T3-1.45	
HA057 L6/22/P22	
HA057+	
HA057+	
HA057+	
HA058 C1/3-4/T3-1.49	

# TEST EQUIPMENT

TA001 L5/119	ARE TEST EQUIPMENT INSTRUCTIONS STORED WITHIN THE UNIT?
TA001+	
TA002 L5/118	ARE WINDOWS FOR TEST EQUIPMENT DIALS BREAK AND SCRATCH RESISTANT?
TA002+	
TA003 L5/118	IS A SIGNAL PROVIDED THAT INDICATES WHEN TEST EQUIPMENT HAS WARMED UP?
TA003+	
TA004 L5/118	HAS WARMUP TIME FOR THE UNIT BEEN CLEARLY STATED?
TA005 L5/118	IS A SIMPLE CHECK PROVIDED TO DETERMINE WHEN THE TEST EQUIPMENT IS MALFUNCTIONING OR IS OUT OF CALIBRATION?
TA005+	
TA006 L5/118	IS THERE A SIMPLE METHOD FOR PUTTING THE TEST EQUIPMENT INTO CALIBRATION?
TA006+	
TA007 L5/118	ARE ALL REMOVEABLE PARTS OF TEST EQUIPMENT INCLUDING THE OUTER CASE CLEARLY LABELED WITH THEIR OFFICIAL NOMENCLATURE?
TA007+	
TA008 L5/118	IS EVERY ITEM LABELED THAT THE TECHNICIAN MUST RECOGNIZE READ OR MANIPULATE?
TA008+	
TA009 L5/118	ARE PROTECTIVE DEVICES PROVIDED THAT SAFEGUARD AGAINST DAMAGE IF THE WRONG SWITCH OR JACK POSITION IS USED?
TA009+	
TA010 L5/114	HAVE THE NUMBER OF CONTROLS AND DISPLAYS BEEN MINIMIZED ON THE TEST EQUIPMENT?
TA010+	
TA011 L5/114	ARE THE OPERATING INSTRUCTIONS CLEAR, CONCISE, AND EASY TO FOLLOW?
TA011+	
TA012 L5/115	HAVE THE NUMBER AND COMPLEXITY OF STEPS REQUIRED FOR TEST EQUIPMENT OPERATION BEEN MINIMIZED?
TA012+	
TA013 L5/115	DO TEST EQUIPMENT DISPLAYS PRESENT EXACT VALUES?
TA014 L5/115	IF TRANSFORMATION OF DISPLAY VALUES IS REQUIRED, ARE CONVERSION TABLES/FACTORS PROVIDED BY EACH SWITCH POSITION/DISPLAY SCALE?
TA014+	
TA015 L5/115	WHEN MORE THAN ONE SCALE IS IN THE TECHNICIAN'S VIEW, ARE THEY CLEARLY DIFFERENTIATED BY LABELING, COLOR CODING, ETC?
TA015+	
TA016 L5/116	ARE PHYSICAL AND VISUAL MEANS PROVIDED TO ENSURE THAT TEST EQUIPMENT IS DEENERGIZED WHEN TESTING IS COMPLETED?
TA016+	
TA017 L5/116	ARE SELECTOR SWITCHES PROVIDED IN LIEU OF A SERIES OF PLUG-IN CONNECTORS?
TA017+	
TA018 L5/116	IS ALL PORTABLE TEST EQUIPMENT RECTANGULAR IN SHAPE FOR EASE OF STORAGE?
TA018+	
TA019 L5/116	ARE HANDLES RECESSED OR HINGED TO REDUCE STORAGE SPACE REQUIREMENTS?
TA019+	
TA020 L5/117	HAS ADEQUATE STORAGE SPACE BEEN PROVIDED IN THE LID OR COVER FOR REMOVEABLE ITEMS/ACCESSORIES?
TA020+	
TA021 L5/117	HAVE THE PROPER LOCATIONS FOR THE VARIOUS ITEMS TO BE STORED BEEN ADEQUATELY IDENTIFIED?
TA021+	
TA022 L5/117	ARE FASTENERS/HOLDING DEVICES PROVIDED TO SECURE ACCESSORIES IN STORAGE COMPARTMENTS TO PREVENT DAMAGE TO THE TEST EQUIPMENT?
TA022+	
TA022 L5/118	IF ADAPTERS MUST BE USED, ARE THEY A PART OF THE REMOVEABLE ITEMS OF THE TEST EQUIPMENT?
TA022+	
TA023 C1/23-34/T23-5.7	HAS ADEQUATE SUPPORT BEEN PROVIDED FOR TEST EQUIPMENT ON OR NEAR THE UNIT BEING TESTED?
TA023+	
TA024 C1/23-35/T23-5.11	DO PLUGS, JACKS, ETC. USED FOR TESTING THE TEST EQUIPMENT APPEAR ON THE OUTER CASE SO THAT CASE REMOVAL IS NOT NECESSARY?
TA024+	
TA025 C1/23-35/T23-5.11	IF INTERNAL REPAIRS REQUIRE CASE REMOVAL ARE DUPLICATE JACKS, PLUGS, ETC. PROVIDED ON THE CHASSIS?
TA025+	
TA026 C1/23-35/T23-5.14	IS THE PURPOSE AND OPERATING PRECAUTIONS FOR THE TEST EQUIPMENT DISPLAYED ON ITS OUTER SURFACE?
TA026+	
TA027 C1/23-35/T23-5.9	DOES TEST EQUIPMENT PACKAGING REFLECT THE MANNER

IA027*	IN WHICH IT WILL BE USED?
IA028 A3/DN2G5/P2.6.P	HAVE THE TEST LEADS BEEN DESIGNED TO REQUIRE ONLY A FRACTION OF A TURN FOR ATTACHMENT TO THE PRIME EQUIPMENT?
IA028*	ARE BENCH MOCKUPS PROVIDED FOR FAULT ISOLATION IN UNITS BROUGHT IN FROM THE FIELD FOR SHOP OR DEPOT MAINTENANCE?
IA028*	ARE EXTENSION CABLES PROVIDED SO THAT ALL UNITS CAN BE REMOVED FROM THE MOCKUP FOR CHECKING?
IA019 A3/DN2G5/P3.1	ARE QUICK DISCONNECT TYPE CONNECTORS USED ON ALL MOCKUP CABLES?
IA019*	ARE EXTRA-HEAVY PROTECTIVE COVERINGS PROVIDED ON ALL MOCKUP CABLES?
IA019*	ARE ALL MOCKUP CABLES PROVIDED WITH TEST POINTS FOR CHECKING SIGNAL FLOW THROUGH EACH WIRE?
IA030 A3/DN2G5/3.2.A	ARE CORRECT SIGNAL VALUES AND TOLERANCES PROVIDED FOR EACH TEST POINT IN THE MOCKUP OPERATING INSTRUCTIONS?
IA030*	IS THE MOCKUP INSTALLED SO THAT EVERY UNIT IS ACCESSIBLE WITHOUT REMOVING ANY OTHER UNIT?
IA031 A3/DN2G5/3.2.B	HAS SUFFICIENT ROOM BEEN PROVIDED IN THE MOCKUP LAYOUT FOR THE TECHNICIAN TO ACCESS ALL UNITS?
IA031*	HAS ALL STANDARD TEST EQUIPMENT FOR MAINTENANCE BEEN IDENTIFIED AND IS IT AVAILABLE?
IA032 A3/DN2G5/P3.2.C	HAS ALL SPECIAL TEST EQUIPMENT FOR MAINTENANCE BEEN IDENTIFIED AND IS IT AVAILABLE?
IA032*	HAVE THE PRIME EQUIPMENT DESIGN REQUIREMENTS FOR UNITS, COVERS AND CASES, CABLES, CONNECTORS, ETC. ALSO BEEN APPLIED TO THE DESIGN OF SPECIAL TEST EQUIPMENT (SEE ITEMS AA THROUGH HA INCLUSIVE FOR DETAILED DESIGN QUESTIONS)?
IA033 A3/DN2G5/P3.2.D	DOES SPECIAL TEST EQUIPMENT HAVE EITHER SELF-CHECKING FEATURES OR TEST POINTS FOR CHECKING BY AUXILIARY EQUIPMENT?
IA033*	CAN THE NEEDED TEST EQUIPMENT BE PROVIDED AND USED UNDER TYPICAL MAINTENANCE CONDITIONS?
IA034 A3/DN2G5/P3.2.5	CAN FAULT DETECTION/ISOLATION BE ACCOMPLISHED WITH THE STANDARD AND SPECIAL PURPOSE TEST EQUIPMENT PROVIDED?
IA034*	IS BUILT-IN TEST EQUIPMENT PROVIDED WHERE USE IS HEAVY AND ACCESS TO THE PRIME EQUIPMENT IS LIMITED?
IA035 A3/DN2G5/3.2.G	IS THE TEST EQUIPMENT DESIGNED TO PERMIT ONE-MAN TROUBLESHOOTING IN THE SHORTEST POSSIBLE TIME?
IA035*	ARE PROBE TIPS DESIGNED TO PROVIDE ADEQUATE CONTACT?
IA036 A3/DN2G5/P3.2.H	ARE MAJOR TEST LEADS PERMANENTLY ATTACHED AND OF ADEQUATE LENGTH?
IA036*	IS PORTABLE TEST EQUIPMENT SELF POWERED?
IA037 A3/DN2G2/P5.F	ARE STANDARD WORK BENCHES AND ACCESSORIES PROVIDED AS NEEDED?
IA037*	DO WORK BENCHES HAVE STORAGE SPACE FOR TESTERS, TOOLS, MANUALS, ETC?
IA038 A3/DN2G2/P5.G	ARE PHONES, HEAD SETS, SIGNAL FLAGS, ETC PROVIDED AT APPROPRIATE WORK STATIONS?
IA038*	ARE EQUIPMENT STANDS, RESTS AND DOLLIES PROVIDED WHERE NEEDED?
IA039 A3/DN2G5/P1	ARE STANDS/DOLLIES COMPATIBLE WITH ACCESSSES TO THE EQUIPMENT TO BE MAINTAINED?
IA039*	ARE SHELVES, HOLDERS, REELS, ETC. BUILT-IN WHEREVER PRACTICAL?
IA039*	IS SAFETY EQUIPMENT PROVIDED/STORED WHERE NEEDED?
IA040 A3/DN2G1/P3.D	ARE PLATFORMS A MINIMUM OF 6 SQUARE FEET IN SIZE AND ARE ADEQUATE SUPPORTS PROVIDED TO ALLOW BOTH HANDS FREE TO PERFORM TASKS?
IA040*	ARE STAIRS/LADDERS/RAMPS OF ADEQUATE SIZE, SHAPE AND STRENGTH PROVIDED AS REQUIRED?
IA040*	
IA041 A3/DN2G2/P6.R	
IA041*	
IA042 L4/5-45	
IA042*	
IA042*	
IA043 I1/171/4	
IA043*	
IA044 I1/17/7	
IA044*	
IA045 I1/171/10	
IA045*	
IA046 I1/171/11	
IA046*	
IA047 I1/171/24	
IA048 I1/170/1	
IA048*	
IA049 I1/170/2	
IA049*	
IA050 I1/170/3	
IA050*	
IA051 I1/170/4	
IA051*	
IA052 I1/170/5	
IA052*	
IA053 I1/170/7	
IA053*	
IA054 I1/170/8	
IA051 I1/170/19	
IA051*	
IA051*	
IA056 I1/170/22	
IA056*	



IA057 11/170/23	ARE SHELTERS/DECKS/COVERS PROVIDED TO PROTECT MEN
IA057*	AND EQUIPMENT AS NECESSARY?
IA051 11/170/24	ARE CRANES, HOISTS, AND ACCESSORIES PROVIDED AS
IA051*	NECESSARY?
IA059 A1/9-17/F9-6.3	DOES THE TEST EQUIPMENT MEET SPECIFIED
IA059*	DETECTABILITY REQUIREMENTS?
IA060 A1/9-17/F9-6.4	DOES THE TEST EQUIPMENT PROVIDE FAULT ISOLATION TO
IA060*	THE DESIRED REPLACEMENT LEVEL?
IA061 A1/9-17/F9-6.5	IS THE TEST EQUIPMENT COMPATABLE WITH ENVIRONMENTAL
IA061*	EXTREMES UNDER DEPLOYED CONDITIONS?
IA062 A1/9-17/F9-6.12	HAVE ALL PARAMETERS AND MEASUREMENT LIMITS BEEN
IA062*	ESTABLISHED FOR THE TEST EQUIPMENT?
IA063 A1/9-17/F9-6.15	DO SENSORS OPERATE WITHOUT DISTURBING OR LOADING
IA063*	THE SYSTEM UNDER TEST?
IA064 A1/8-18/F8-11.5	HAS THE TEST EQUIPMENT BEEN DESIGNED TO MINIMIZE
IA064*	THE POSSIBILITY OF OPERATOR ERROR?
IA065 A1/8-18/F8-11.12	HAS THE TEST EQUIPMENT BEEN DESIGNED TO CHECK THE
IA065*	TEST ITEM AT THE HIGHEST POSSIBLE FUNCTIONAL LEVEL?

# TEST POINTS

JA001 C1/23-30/T23-4.1	ARE TEST POINTS LOCATED ON FRONT PANELS WHEREVER POSSIBLE?
JA001+	
JA002 C1/23-30/T23-4.2	IS ACCESSIBILITY TO EXTERNAL TEST POINTS ASSURED UNDER USE CONDITIONS?
JA002+	
JA003 C1/23-30/T23-4.3	ARE TEST POINTS GROUPED FOR ACCESSIBILITY AND CONVENIENCE OF SEQUENTIAL TESTING?
JA003+	
JA004 C1/23-30/T23-4.4	IS EACH TEST POINT FULLY IDENTIFIED?
JA005 C1/23-30/T23-4.5	IS EACH TEST POINT LABELED WITH ITS IN-TOLERANCE SIGNAL OR LIMITS WHICH SHOULD BE MEASURED?
JA005+	
JA006 C1/23-30/T23-4.6	ARE TEST POINTS LABELED WITH THE DESIGNATION OF AVAILABLE OUTPUTS?
JA006+	
JA007 C1/23-30/T23-4.7	ARE ALL TEST POINTS UNIQUELY COLOR CODED?
JA008 C1/23-30/T23-4.8	ARE TEST POINTS PROVIDED IN ACCORDANCE WITH THE SYSTEM MAINTENANCE AND TEST PLANS?
JA008+	
JA009 C1/23-30/T23-4.9	ARE TEST LEAD CONNECTORS USED THAT REQUIRE ONLY A FRACTION OF A TURN TO CONNECT?
JA009+	
JA010 C1/23-30/T23-4.10	ARE TEST POINTS LOCATED CLOSE TO ASSOCIATED CONTROLS AND DISPLAYS?
JA010+	
JA011 C1/23-30/T23-4.11	IS EACH TEST POINT USED IN ADJUSTMENT PROCEDURES ASSOCIATED WITH ONLY ONE ADJUSTMENT CONTROL?
JA011+	
JA012 C1/23-30/T23-4.12	IS AN UNAMBIGUOUS SIGNAL PROVIDED AT A TEST POINT WHEN THE ASSOCIATED CONTROL HAS BEEN MOVED?
JA012+	
JA013 C1/23-30/T23-4.14	ARE TEST POINTS PROVIDED FOR DIRECT CHECK OF ALL REPLACEABLE PARTS?
JA013+	
JA014 C1/23-30/T23-4.15	CAN FAN-OUT CABLES IN JUNCTION BOXES BE USED FOR CHECKING IF STANDARD TEST POINTS ARE NOT PROVIDED?
JA014+	
JA015 C1/23-30/T23-4.16	ARE TEST POINTS LOCATED IN ONE PLACE TO THE MAXIMUM EXTENT POSSIBLE?
JA015+	
JA016 C1/23-30/T23-4.17	ARE TEST POINTS CODED TO THEIR ASSOCIATED UNITS TO INDICATE LOCATION OF FAULTY CIRCUITS?
JA016+	
JA017 C1/23-30/T23-4.18	HAVE ADEQUATE TEST POINTS BEEN PROVIDED TO MINIMIZE THE STEPS INVOLVED IN TROUBLESHOOTING?
JA017+	
JA018 C1/23-30/T23-4.19	ARE TEST POINT LOCATIONS EASY TO FIND, ACCESSIBLE, AND OBSERVABLE FROM THE WORKING POSITION?
JA018+	
JA019 C1/23-30/T23-4.20	HAVE TEST POINTS THAT PROVIDE TEST PROBE RETENTION BEEN UTILIZED WHERE REQUIRED?
JA019+	
JA020 C1/23-30/T23-4.22	ARE ROUTINE TEST POINTS READILY AVAILABLE TO THE TECHNICIAN WITHOUT THE REMOVAL OF COVERS, CASES, ETC.?
JA020+	
JA020+	
JA021 C1/23-30/T23-4.23	ARE TEST POINTS ADEQUATELY PROTECTED AND ILLUMINATED?
JA021+	
JA022 C1/23-30/T23-4.24	ARE ROUTINE TEST POINTS AVAILABLE TO THE TECHNICIAN WITHOUT REMOVAL OF THE CHASSIS FROM RACKS OR CABINETS?
JA022+	
JA022+	
JA023 L4/5-46	ARE TEST POINTS DESIGNED TO PROTECT THE CIRCUITRY BEING CHECKED?
JA023+	
JA024 L4/5-46	HAVE VOLTAGE DIVIDERS BEEN PROVIDED AT TEST POINTS FOR CIRCUITS CARRYING MORE THAN 300 VOLTS?
JA024+	
JA025 L6/29/PK.3	ARE PRIMARY TEST POINTS READILY DISTINGUISHED FROM SECONDARY TEST POINTS?
JA025+	
JA026 L6/29/PK.6	ARE TEST POINTS PROVIDED AT THE INPUT AND OUTPUT OF EACH THROW-AWAY COMPONENT WHERE FEASIBLE?
JA026+	
JA027 L1/79/P7.E	HAVE TERMINAL BOARD CONNECTIONS THAT ARE TO BE USED AS TEST POINTS BEEN IDENTIFIED?
JA027+	
JA028 I1/172/3	ARE A MINIMUM NUMBER OF DIFFERENT TYPES/SIZES OF TEST POINTS USED?
JA028+	
JA029 I1/172/6	ARE TEST POINTS PROVIDED IN ALL CONNECTORS, JACKS, AND TERMINALS?
JA029+	
JA030 I1/172/8	ARE TEST POINTS EXPOSED EXCEPT WHERE CONCEALMENT IS REQUIRED?
JA030+	
JA031 I1/172/10	ARE TEST POINTS GROUPED ON THE MOST ACCESSIBLE FACE OF EACH UNIT?
JA031+	

JA032 11/172/11  
JA032+  
JA033 11/172/16  
JA033+  
JA034 11/172/21  
JA034+  
JA034+  
JA035 11/172/22  
JA035+  
JA036 11/172/23  
JA037 11/172/25  
JA037+  
JA038 L5/78  
JA038+  
JA039 L5/81  
JA039+  
JA039+

ARE TEST POINTS GROUPED WITHIN NORMAL LIMITS OF  
TEST LEAD LENGTHS?  
HAS ADEQUATE WORK SPACE BEEN PROVIDED AROUND  
TEST POINTS?  
HAVE LUMINESCENT MARKINGS BEEN PROVIDED TO AID IN  
TEST POINT LOCATION WHERE LOW ILLUMINATION MAY  
EXIST?  
ARE THE TEST POINTS DESIGNED TO WITHSTAND LONG  
USAGE?  
ARE TEST POINTS ADEQUATELY INSULATED?  
ARE TEST POINTS LOCATED/PROTECTED FROM MOISTURE,  
DIRT AND CORROSIVES?  
ARE TEST POINTS GROUPED ON TEST PANELS WHERE  
APPROPRIATE?  
ARE TEST POINTS PROVIDED SO THAT TROUBLESHOOTING  
OF COMPONENTS DOES NOT REQUIRE THEIR REMOVAL FROM  
A MAJOR ASSEMBLY?

# TOOL REQUIREMENTS

KA001 11/173/1	IS THE DESIGN SUCH THAT EACH SPECIALIST CARRIES A
KA001+	MINIMUM NUMBER AND WEIGHT OF TOOLS?
KA002 11/173/2	ARE A MINIMUM NUMBER OF TOOLS REQUIRED FOR EACH
KA002+	MAINTENANCE TASK?
KA003 11/173/3	HAVE THE REQUIRED TOOLS BEEN SELECTED FROM STANDARD
KA003+	TOOL LISTS?
KA004 11/173/5	ARE TOOL KITS SMALL, LIGHT, DURABLE, AND EASY TO
KA004+	HANDLE?
KA005 11/173/4	DO TOOL ALLOWANCES COVER ALL MAINTENANCE PROCEDURES
KA005+	AND TASK?
KA006 11/173/6	ARE TOOL KITS PROVIDED WITH HANDLES AND STRAPS?
KA007 11/173/6	HAS ADEQUATE STORAGE SPACE BEEN PROVIDED IN EACH
KA007+	TOOL KIT?
KA008 11/173/7	ARE SPECIAL TOOLS REQUIRED ONLY IF NO STANDARD TOOL
KA008+	WILL DO?
KA009 11/173/8	ARE SPECIAL TOOLS PROVIDED WITH AND STORED IN THE
KA009+	EQUIPMENT?
KA010 11/173/9	ARE UNUSUAL SHAPED STANDARD TOOLS AVOIDED?
KA011 11/173/10	ARE SPEED AND RATCHET TYPE TOOLS PROVIDED TO
KA011+	REDUCE TASK TIME?
KA012 11/173/11	ARE A MINIMUM VARIETY OF SIZES OF STANDARD TOOLS
KA012+	NEEDED?
KA013 11/173/12	ARE ALL TOOLS DURABLE, RUGGED, AND PROVIDED WITH
KA013+	A DULL FINISH?
KA014 11/173/13	ARE METAL HANDLED TOOLS AVOIDED FOR USE UNDER
KA014+	EXTREME TEMPERATURES AND NEAR HIGH VOLTAGES?
KA015 11/173/15	ARE INSULATED, NONSPARKING TOOLS PROVIDED FOR USE
KA015+	NEAR COMBUSTABLE MATERIALS?
KA016 11/173/16	UNDER NORMAL USE ARE MODULE PULLERS DESIGNED SO
KA016+	THAT THEY CAN NOT DAMAGE/SHORT MODULES?
KA017 11/173/17	ARE EXTENDERS, ADAPTERS, CLIPS, ETC. PROVIDED AS
KA017+	REQUIRED?
KA018 11/173/18	ARE EXTENSION CABLES, HOSES, ETC PROVIDED AS
KA018+	NEEDED?
KA019 11/173/19	HAVE PRECISION OR CALIBRATED TOOLS BEEN AVOIDED
KA019+	FOR FIELD USE?
KA020 11/173/20	ARE TASKS REQUIRING MANY SPECIAL OR DELICATE TOOLS
KA020+	PERFORMED ONLY IN THE SHOP?
KA021 11/173/21	ARE TOOL TIPS AND WEARING SURFACES REPLACEABLE?
KA022 A3/DN267/P5.D	HAVE GUIDES BEEN PROVIDED FOR TOOLS IN THE EQUIP-
KA022+	MENT WHEN AN ADJUSTMENT WOULD OTHERWISE BE
KA022+	DIFFICULT TO LOCATE?
KA023 A3/DN267/P5.E	ARE GUARDS PROVIDED FOR TOOLS IN THE EQUIPMENT
KA023+	WHEN AN ADJUSTMENT COULD BE DANGEROUS TO LOCATE?
KA024 C1/11-4/P11-3.2.14	ARE REMOTELY CONTROLLED TOOLS PROVIDED WHERE
KA024+	FEASIBLE, TO REDUCE MAINTENANCE TIME?
KA025 C1/11-4/P11-3.2.19	HAVE ADEQUATE GRIPPING SURFACES BEEN PROVIDED ON
KA025+	HAND TOOL HANDLES?
KA026 C1/11-4/P11-3.2.21	ARE HOLDING TOOLS (PLIERS, CLAMPS, ETC.) PROVIDED
KA026+	WITH SKID-PROOF HOLDING SURFACES?
KA027 C1/11-5/P11-3.2.24	ARE TEMPLATES PROVIDED FOR MAKING SURFACE CONTROL
KA027+	ADJUSTMENTS?
KA028 C1/11-5/P11-3.2.24	ARE TEMPLATES PROVIDED FOR MOUNTING LINKS, ARMS,
KA028+	RODS, ETC. ON FLAT SURFACES?
KA029 C1/11-5/P11-3.2.25	ARE HIGH SPEED SOLDERING DEVICES PROVIDED THAT WILL
KA029+	MELT THE CONNECTIONS BEING SERVICED WITHOUT DAMAGE
KA029+	TO ADJACENT ELEMENTS?
KA030 C1/11-5/P11-3.2.26	ARE CLAMPING DEVICES PROVIDED TO REMOVE SMALL
KA030+	PLUG-IN ASSEMBLIES?
KA031 C1/11-5/P11-3.2.30	HAVE PRINTED CIRCUIT CARD EXTENDERS, CARD
KA031+	EXTRACTORS AND HEAT SINKS FOR SOLDERING PURPOSES
KA031+	BEEN PROVIDED?

TROUBLE SHOOTING AIDS

LA001 L1/78/6.A	HAVE SUFFICIENT INDICATORS BEEN PROVIDED FOR
LA001+	ACCURATE AND EASY DETERMINATION OF EQUIPMENT
LA001+	PERFORMANCE?
LA002 L1/78/6.B	HAVE GO-NO-GO INDICATORS BEEN PROVIDED WHEREVER
LA002+	POSSIBLE?
LA003 L1/79/6.C	HAVE AUDITORY SIGNALS BEEN PROVIDED TO SUPPLEMENT
LA003+	FAULT INDICATORS FOR EQUIPMENT MALFUNCTIONS?
LA004 L1/79/6.D	HAS MAXIMUM USE OF BUILT-IN TEST EQUIPMENT BEEN
LA004+	MADE CONSISTENT WITH OPERATIONAL REQUIREMENTS AND
LA004+	THE MAINTENANCE CONCEPT?
LA005 L1/79/6.F	HAVE SELF-TEST FEATURES BEEN PROVIDED WHEREVER
LA005+	PRACTICAL?
LA006 B2/151/P5.9.1.6	IS RAPID AND POSITIVE FAULT DETECTION AND ISOLATION
LA006+	OF DEFECTIVE EQUIPMENT PROVIDED TO PERMIT THEIR
LA006+	PROMPT REMOVAL AND REPLACEMENT?
LA007 L4/5-52	DO THE CODING AND SYMBOLS ON EQUIPMENT COINCIDE
LA007+	WITH INSTRUCTIONS IN THE MAINTENANCE MANUAL?
LA008 L4/5-52	ARE THE MAINTENANCE MANUALS ORGANIZED SO THAT
LA008+	INFORMATION CAN BE QUICKLY FOUND?
LA009 L4/5-52	ARE TROUBLESHOOTING INSTRUCTIONS CLEAR, CONCISE,
LA009+	AND EASY TO FOLLOW?
LA010 L6/22/PF.22	ARE LIGHTS USED ONLY FOR MAINTENANCE AND
LA010+	ADJUSTMENTS COVERED, BUT READILY ACCESSIBLE AND
LA010+	VISIBLE WHEN NEEDED BY THE TECHNICIAN?
LA011 B2/15/P4.2	HAS COLOR CODING BEEN UTILIZED FOR POSITIVE
LA011+	IDENTIFICATION OF WIRES, TERMINALS, MODULES, ETC?
LA012 L6/58/PC	HAS ADEQUATE ILLUMINATION BEEN PROVIDED FOR
LA012+	TROUBLESHOOTING THE EQUIPMENT?
LA013 A2/DN2A1/P1	HAS ADEQUATE SPACE BEEN PROVIDED AROUND UNITS FOR
LA013+	TOOLS AND TEST EQUIPMENT UTILIZED FOR TROUBLE-
LA013+	SHOOTING?



# HUMAN FACTORS-GENERAL

MA001 R2/115/P5.7.1.1	HAS A KICK SPACE OF AT LEAST FOUR INCHES HIGH AND FOUR INCHES DEEP BEEN PROVIDED AT THE BASE OF EACH CABINET, CONSOLE, ETC?
MA001+	
MA002 R2/115/P5.7.1.2	ARE HANDLES ON CABINETS AND CONSOLES RECESSED OR DESIGNED SUCH THAT THEY NEITHER INJURE PERSONNEL NOR ENTANGLE EQUIPMENT AND CLOTHING?
MA002+	
MA003 R2/115/P5.7.1.3	HAS AT LEAST FOUR FEET OF FREE FLOOR SPACE BEEN PROVIDED WHEREVER FEASIBLE?
MA003+	
MA004 R2/115/P5.7.1.3.1	IS THE WORK AREA AT LEAST 42 INCHES DEEP IN FRONT OF RACKS?
MA004+	
MA005 R2/115/P5.7.1.3.2	IS THE MINIMUM LATERAL WORK SPACE FOR RACKS HAVING DRAWERS WEIGHING LESS THAN 45 POUNDS, 18 INCHES ON ONE SIDE AND 4 INCHES ON THE OTHER, AND FOR DRAWERS OVER 45 POUNDS, 18 INCHES ON EACH SIDE?
MA005+	
MA006 R2/115/P5.7.1.3.3	HAS ADEQUATE AND SUITABLE STORAGE SPACE BEEN PROVIDED IN OR NEAR CONSOLES FOR MANUALS, WORK SHEETS, MATERIALS, ETC., REQUIRED BY OPERATOR AND MAINTENANCE PERSONNEL?
MA006+	
MA007 R2/115/P5.7.1.4	DOES THE SLOPE OF THE CONTROL-DISPLAY PANEL BEGIN AT SHELF LEVEL FOR NORMAL CONSOLE OPERATION?
MA007+	
MA008 L6/8/P R.4	HAS ADEQUATE ROOM BEEN PROVIDED TO ACCOMMODATE THE HAND FOR GRASPING ALL HANDLES?
MA008+	
MA009 L6/8/P R.3	HAS ADEQUATE SPACE BEEN PROVIDED FOR THE OPERATOR/TECHNICIAN TO PERFORM HIS FUNCTIONS WHEN WEARING PROTECTIVE CLOTHING/DEVICES?
MA009+	
MA010 R2/117/P5.7.4	HAS ADEQUATE SPACE BEEN PROVIDED FOR THE TECHNICIAN TO PERFORM IN UNUSUAL POSITIONS SUCH AS STOOPING, SQUATTING, KNEELING, ETC?
MA010+	
MA011 R2/16/P4.4.L	HAVE PROVISIONS BEEN MADE TO MINIMIZE PHYSICAL AND MENTAL STRESS AND FATIGUE?
MA011+	
MA012 L1/R2/21	HAVE ENDURANCE AND ENERGY OF THE TECHNICIAN BEEN CONSIDERED IN DEVELOPING THE MAINTENANCE APPROACH?
MA012+	
MA013 L1/R2/22	HAVE EYE-HAND COORDINATION AND MANUAL DEXTERITY BEEN CONSIDERED IN IDENTIFYING MAINTENANCE ACTIONS?
MA013+	
MA015 L1/R2/26	HAS ARM, LEG AND BACK STRENGTH OF THE TECHNICIAN BEEN CONSIDERED IN DETERMINING MAINTENANCE ACTIONS?
MA015+	
MA016 L4/5-51	DO VISUAL INDICATORS AND DISPLAYS PROVIDE CLEAR, CONCISE AND ACCURATE INFORMATION UNDER ALL OPERATING/MAINTENANCE CONDITIONS?
MA016+	
MA017 L4/5-52	DOES THE EQUIPMENT DESIGN ARRANGEMENT ALLOW SPACE FOR SEVERAL OPERATORS TO WORK WITHOUT INTERFERING WITH EACH OTHER?
MA017+	
MA018 L4/5-52	DO ARRANGEMENTS AND LAYOUTS BALANCE THE WORK LOAD BETWEEN THE TWO HANDS?
MA018+	
MA019 B2/59/P5.4.1.1	HAVE CONTROLS BEEN SELECTED SO THAT NONE OF THE OPERATOR'S LIMBS WILL BE OVERBURDENED?
MA019+	
MA020 B2/59/P5.4.1.1	HAS OPERATION UNDER VARIABLE G-LOADS BEEN CONSIDERED IN THE SELECTION OF CONTROLS?
MA020+	
MA021 B2/26/P5.2.1.3	ARE DISPLAYS THAT ARE USED MOST FREQUENTLY GROUPED TOGETHER AND PLACED IN THE OPTIMUM VISUAL ZONE?
MA021+	
MA022 B2/26/P5.2.1.3	ARE VERY IMPORTANT OR CRITICAL DISPLAYS PLACED IN THE OPTIMUM VISUAL ZONE OR OTHERWISE HIGHLIGHTED?
MA022+	
MA023 B2/26/P5.2.1.3	IS THE ARRANGEMENT OF DISPLAYS CONSISTANT FROM APPLICATION TO APPLICATION THROUGHOUT THE SYSTEM?
MA023+	
MA024 B2/30/P5.2.2.1	FOR CRITICAL FUNCTIONS, ARE INDICATOR LIGHTS LOCATED WITHIN 15 DEGREES OF THE OPERATOR'S NORMAL LINE OF SIGHT?
MA024+	
MA025 B2/19/P5.1.1.1	ARE CONTROL-DISPLAY RELATIONSHIPS FUNCTIONALLY EFFECTIVE?

#### STANDING TASKS

MA101 R2/115/P5.7.2.1	HAVE CONVENIENT WORK SURFACES BEEN PROVIDED TO
MA101+	SUPPORT MANUALS, WORK SHEETS, ETC. FOR STANDING
MA101+	OPERATIONS?
MA102 R2/116/P5.7.2.2	HAVE VISUAL DISPLAYS ON VERTICAL SURFACES BEEN
MA102+	PLACED BETWEEN 41 INCHES AND 74 INCHES ABOVE THE
MA102+	STANDING SURFACE?
MA103 R2/116/P5.7.2.3	HAVE INDICATORS THAT MUST BE READ FREQUENTLY BEEN
MA103+	PLACED BETWEEN 50 INCHES AND 69 INCHES ABOVE THE
MA103+	STANDING SURFACE?
MA104 R2/116/P5.7.2.4	HAVE CONTROLS MOUNTED ON A VERTICAL SURFACE BEEN
MA104+	PLACED BETWEEN 34 AND 74 INCHES ABOVE THE STANDING
MA104+	SURFACE?
MA105 R2/116/P5.7.2.5	HAVE CONTROLS REQUIRING FREQUENT OPERATION AND
MA105+	EMERGENCY CONTROLS BEEN PLACED BETWEEN 34 AND 57
MA105+	INCHES ABOVE THE STANDING SURFACE?
MA106 L6/9/P C.5	ARE WORK SURFACES/BENCHES 36 INCHES ABOVE THE
MA106+	FLOOR FOR STANDING OPERATIONS?

#### SEATED TASKS

MA201 R2/116/P5.7.3.1	ARE WORK SURFACES 30 INCHES WIDE AND 16 INCHES DEEP
MA201+	WHEREVER PRACTICAL FOR SEATED OPERATIONS?
MA202 R2/116/P5.7.3.2	ARE WRITING SURFACES/DESK TOPS 29 TO 31 INCHES
MA202+	ABOVE THE FLOOR?
MA203 R2/116/P5.7.3.3	ARE WRITING SURFACES AT LEAST 24 INCHES WIDE AND
MA203+	16 INCHES DEEP?
MA204 R2/116/P5.7.3.4.1	DOES SEATING PROVIDE ADEQUATE BODY SUPPORT RELATIVE
MA204+	TO THE ACTIVITIES TO BE PERFORMED?
MA205 R2/116/P5.7.3.4.2	HAVE PROVISIONS BEEN MADE FOR VERTICAL SEAT
MA205+	ADJUSTMENTS BETWEEN 16 AND 21 INCHES?
MA206 R2/116/P5.7.3.4.3	HAS A BACKREST BEEN PROVIDED THAT RECLINES BETWEEN
MA206+	103 AND 115 DEGREES AND SUPPORTS THE TORSO SUCH
MA206+	THAT THE "EYE LINE" CAN BE ACHIEVED WITH NO MORE
MA206+	THAN 3 INCHES OF FORWARD BODY MOVEMENT?
MA207 R2/117/P5.7.3.4.4	IS CUSHIONING PROVIDED THAT IS AT LEAST ONE INCH
MA207+	THICK OF COMPRESSIBLE MATERIAL COVERED WITH A
MA207+	SMOOTH SURFACE?
MA208 R2/117/P5.7.3.4.5	ARE ARM RESTS PROVIDED EITHER AS AN INTEGRAL PART
MA208+	OF THE CHAIR OR PART OF THE CONSOLE?
MA209 R2/117/P5.7.3.5	HAS KNEE AND FOOT ROOM BEEN PROVIDED BENEATH WORK
MA209+	SURFACES?
MA210 R2/117/P5.7.3.6	ARE VISUAL DISPLAYS MOUNTED ON VERTICAL PANELS
MA210+	PLACED BETWEEN 6 AND 48 INCHES ABOVE THE SITTING
MA210+	SURFACE?
MA211 R2/117/P5.7.3.7	ARE INDICATORS THAT MUST BE READ FREQUENTLY PLACED
MA211+	BETWEEN 14 AND 37 INCHES ABOVE THE SITTING SURFACE?
MA212 R2/117/P5.7.3.8	ARE WARNING DISPLAYS MOUNTED AT LEAST 22 INCHES
MA212+	ABOVE THE SITTING SURFACE?
MA213 R2/117/P5.7.3.9	ARE CONTROLS MOUNTED ON A VERTICAL SURFACE LOCATED
MA213+	BETWEEN 8 AND 35 INCHES ABOVE THE SITTING SURFACE?
MA214 R2/117/P5.7.3.10	ARE CONTROLS REQUIRING FREQUENT OPERATION MOUNTED
MA214+	BETWEEN 8 AND 30 INCHES ABOVE THE SITTING SURFACE?

# ENVIRONMENT

MA301 R2/137/PS.8.1.1	HAVE ADEQUATE PROVISIONS FOR HEATING IN WORK AREAS BEEN MADE?
MA301+	
MA302 R2/137/PS.8.1.2	HAVE ADEQUATE PROVISIONS FOR VENTILATION IN WORK AREAS BEEN MADE?
MA302+	
MA303 R2/137/PS.8.1.3	HAVE ADEQUATE PROVISIONS FOR AIR CONDITIONING IN WORK AREAS BEEN MADE?
MA303+	
MA304 R2/137/PS.8.1.4	HAVE ADEQUATE HUMIDITY CONTROLS BEEN PROVIDED?
MA305 R2/137/PS.8.1.5	HAS TEMPERATURE UNIFORMITY BEEN PROVIDED IN WORK AREAS?
MA305+	
MA306 R2/137/PS.8.1.6	HAS ADEQUATE THERMAL CONTROL BEEN PROVIDED FOR ALL SPECIAL PROTECTIVE CLOTHING AND PERSONNEL EQUIPMENT?
MA306+	
MA307 R2/140/PS.8.2	IS ADEQUATE ILLUMINATION PROVIDED FOR PERFORMING MAINTENANCE TASKS?
MA307+	
MA308 R2/140/PS.8.2	HAS A CAPABILITY FOR DIMMING BEEN PROVIDED?
MA309 R2/140/PS.8.2	HAS SUPPLEMENTARY LIGHTING BEEN PROVIDED WHERE GENERAL LIGHTING IS INADEQUATE FOR TASK PERFORMANCE?
MA309+	
MA310 R2/140/PS.8.2	HAVE GLARE AND SPECULAR REFLECTION BEEN MINIMIZED?
MA311 R2/140/PS.8.2	HAVE PORTABLE LIGHTS BEEN PROVIDED AS NECESSARY?
MA312 R2/140/PS.8.3.2	ARE NOISE LEVELS THAT PERSONNEL ARE SUBJECTED TO ALWAYS BELOW 150 DB REGARDLESS OF THE NOISE ATTENUATION PROVIDED BY PROTECTIVE DEVICES?
MA313 R2/140/PS.8.3.9	ARE WORK SPACE NOISES AT A LEVEL THAT PERMITS ALL DIRECT AND TELEPHONE COMMUNICATIONS AND WITHIN AN ACCEPTABLE ACOUSTICAL WORK ENVIRONMENT?
MA313+	
MA314 L6/7/P A.3	HAS THE AMOUNT OF TRANSMITTED NOISE BEEN HELD TO ACCEPTABLE LEVELS?
MA314+	
MA315 L6/7/P A.2	HAS THE AMOUNT OF NOISE PRODUCED BY EQUIPMENT BEEN HELD TO ACCEPTABLE LEVELS?
MA315+	
MA316 L6/7/P A.4	ARE PROTECTIVE DEVICES PROVIDED FOR PERSONNEL THAT WORK IN HIGH INTENSITY NOISE LEVELS?
MA316+	
MA317 R2/146/PS.8.3.4.1	HAVE NOISE LEVELS BEEN CONTROLLED TO THE MAXIMUM EXTENT POSSIBLE?
MA317+	
MA318 R2/146/PS.8.3.4.2	HAVE ADEQUATE ACOUSTIC MATERIALS BEEN UTILIZED IN THE DESIGN AND LAYOUT OF WORK AREAS?
MA318+	

# MAINTENANCE DESIGN CRITERIA

NA001 C1/3-2/T3-1.1	HAS THE NEED FOR MAINTENANCE BEEN MINIMIZED?
NA002 C1/3-2/T3-1.2	HAS THE AMOUNT, FREQUENCY AND COMPLEXITY OF REQUIRED MAINTENANCE TASKS BEEN MINIMIZED?
NA002+	
NA003 C1/3-2/T3-1.4	HAS THE REQUIRED SKILL LEVELS FOR MAINTENANCE AND TRAINING REQUIREMENTS BEEN MINIMIZED?
NA003+	
NA004 C1/3-2/T3-1.5	HAS THE MAXIMUM FREQUENCY AND EXTENT OF PREVENTIVE MAINTENANCE TO BE PERFORMED BEEN ESTABLISHED?
NA004+	
NA005 C1/3-2/T3-1.8	HAVE COMPONENTS BEEN PROVIDED THAT CAN BE ADJUSTED FOR WEAR AND IS THE ADJUSTMENT READILY ACCESSIBLE?
NA005+	
NA006 C1/3-2/T3-1.9	IS THE UNIT AND ITS COMPONENTS DESIGNED FOR MINIMUM DOWNTIME?
NA006+	
NA007 C1/3-2/T3-1.10	HAS SIMPLE, ACCURATE AND SATISFACTORY TECHNICAL DATA BEEN DELIVERED WITH THE EQUIPMENT?
NA007+	
NA008 C1/3-2/T3-1.13	HAS OPTIMUM ACCESSIBILITY BEEN PROVIDED TO ALL UNITS REQUIRING FREQUENT MAINTENANCE, INSPECTION, REMOVAL OR REPLACEMENT?
NA008+	
NA008+	
NA009 C1/3-2/T3-1.14	HAVE METHODS BEEN PROVIDED FOR RAPID AND POSITIVE IDENTIFICATION OF EQUIPMENT MALFUNCTION OR MARGINAL PERFORMANCE?
NA009+	
NA009+	
NA010 C1/3-2/T3-1.15	ARE HUMAN FACTORS ASPECTS SATISFACTORY FOR OPERATION AND MAINTENANCE OF THE EQUIPMENT?
NA010+	
NA011 C1/3-2/T3-1.16	HAS ADEQUATE CAPABILITY TO VERIFY PERFORMANCE, LOCATE MALFUNCTIONS AND PERFORM CALIBRATIONS BEEN PROVIDED?
NA011+	
NA011+	
NA012 C1/3-2/T3-1.17	HAVE MEANS BEEN PROVIDED FOR CLEAR AND RAPID IDENTIFICATION OF ALL PARTS AND COMPONENTS?
NA012+	
NA013 C1/3-2/T3-1.18	HAVE THE TYPES AND QUANTITIES OF TOOLS FOR MAINTENANCE BEEN MINIMIZED?
NA013+	
NA014 UJUL182/23	HAS VISUAL ACUITY BEEN CONSIDERED IN DEVELOPING DISPLAYS, SCALES, LABELING, LIGHTING, ETC?
NA014+	
NA014 C1/3-2/T3-1.19	HAS THE USE OF EXISTING MAINTENANCE FACILITIES AND EQUIPMENT BEEN MAXIMIZED?
NA014+	
NA015 C1/3-2/T3-1.20	HAVE THE TYPES AND NUMBERS OF REPAIR PARTS FOR MAINTENANCE BEEN MINIMIZED?
NA015+	
NA016 C1/3-2/T3-1.21	HAVE MILITARY STANDARD PARTS, MATERIALS, ETC BEEN UTILIZED TO THE FULLEST EXTENT POSSIBLE?
NA016+	
NA017 C1/3-3/T3-1.22	HAS THE USE OF CRITICAL MATERIALS AND COSTLY PROCESSES BEEN MINIMIZED?
NA017+	
NA018 C1/3-3/T3-1.23	HAS INTERCHANGEABILITY BEEN MAXIMIZED?
NA019 C1/3-3/T3-1.24	HAVE SAFETY FEATURES FOR EQUIPMENT AND PERSONNEL BEEN MAXIMIZED?
NA019+	
NA020 C1/3-3/T3-1.25	HAVE ADEQUATE TOWING, HOISTING, LIFTING AND JACKING FACILITIES BEEN PROVIDED?
NA020+	
NA021 C1/3-3/T3-1.26	HAS MAXIMUM STORAGE LIFE WITH MINIMUM STORAGE REHABILITATION FOR HARDWARE BEEN PROVIDED?
NA021+	
NA022 C1/3-3/T3-1.27	HAS THE AMOUNT OF SUPPLY SUPPORT BEEN MINIMIZED?
NA023 C1/3-3/T3-1.28	ARE UNITS QUICKLY REPLACEABLE WITH MINIMUM TIME AND PERSONNEL?
NA023+	
NA024 C1/3-3/T3-1.29	HAVE THE HAZARDS TO EQUIPMENT AND PERSONNEL BEEN MINIMIZED?
NA024+	
NA025 C1/3-3/T3-1.30	HAS NECESSARY ENVIRONMENTAL COMPATABILITY BEEN DESIGNED INTO THE EQUIPMENT?
NA025+	
NA026 C1/3-3/T3-1.31	HAVE UNDESIRABLE OPERATING AND MAINTENANCE CHARACTERISTICS (NOISE, VIBRATION, RADIATION, ETC.) BEEN MINIMIZED?
NA026+	
NA027 C1/3-3/T3-1.32	HAVE BEARINGS AND SEALS BEEN SELECTED THAT MINIMIZE SERVICING AND REPLACEMENT TASKS?
NA027+	
NA028 C1/3-3/T3-1.33	HAVE GEARS OF ADEQUATE SIZE AND TYPE THAT SATISFY ALL OVERLOAD REQUIREMENTS BEEN PROVIDED?
NA028+	
NA029 C1/3-3/T3-1.35	HAVE MECHANICAL, ELECTRICAL, ELECTRONIC, ETC COMPONENTS BEEN SUFFICIENTLY DERATED TO WITHSTAND UNEXPECTED OVERLOADS?
NA029+	
NA029+	
NA030 C1/3-3/T3-1.37	ARE COMPONENTS REQUIRING FREQUENT MAINTENANCE



NA030.	LOCATED TO PRECLUDE REMOVAL OF OTHER COMPONENTS?
NA031 C1/3-3/T3-1.38	HAS LINE-OF-SIGHT BEEN PROVIDED TO COMPONENTS
NA031.	WHEREVER POSSIBLE?
NA032 C1/3-3/T3-1.39	ARE ADJUSTMENT CONTROLS READILY ACCESSIBLE?
NA033 C1/3-3/T3-1.40	ARE LOCKING DEVICES PROVIDED ON ALL ADJUSTMENT
NA033.	CONTROLS?
NA034 C1/3-3/T3-1.41	HAVE SUFFICIENT AND ADEQUATE TEST POINTS AND TEST
NA034.	FEATURES BEEN PROVIDED?
NA035 C1/3-3/T3-1.42	IS ALL TEST EQUIPMENT AND CALIBRATION EQUIPMENT
NA035.	REQUIRED FOR THE HARDWARE AVAILABLE?
NA036 C1/3-4/T3-1.43	HAS GO-NO-GO, AUTOMATIC AND BUILT-IN FAULT
NA036.	ISOLATION EQUIPMENT BEEN PROVIDED WHEREVER
NA036.	FEASIBLE, PRACTICAL OR COST EFFECTIVE?
NA037 C1/3-4/T3-1.44	HAS ADEQUATE STORAGE BEEN PROVIDED IN THE EQUIPMENT
NA037.	FOR EXPENDABLES (FUSES, THROW-AWAY UNITS, ETC.)?
NA038 C1/3-4/T3-1.45	ARE BATTERY COMPARTMENTS LOCATED FOR RAPID
NA038.	EGRESS AND SERVICING?
NA039 C1/3-4/T3-1.45	ARE BATTERY COMPARTMENTS VENTED, AS REQUIRED?
NA040 C1/3-4/T3-1.46	IS REPAIRABLE EQUIPMENT IN ACCORD WITH THE
NA040.	MAINTENANCE CONCEPT?
NA041 C1/3-4/T3-1.47	HAVE ADEQUATE GUARDS BEEN INSTALLED OVER DANGEROUS
NA041.	MOVING PARTS?
NA042 C1/3-4/T3-1.48	HAS ADEQUATE PROTECTION BEEN PROVIDED FROM
NA042.	DANGEROUS ELECTRICAL VOLTAGES?
NA043 C1/3-4/T3-1.49	HAS ADEQUATE PROTECTION BEEN PROVIDED FROM
NA043.	TOXIC FUMES?
NA044 C1/3-4/T3-1.50	HAVE EXPLOSION PROOF DESIGNS BEEN UTILIZED
NA044.	WHEREVER REQUIRED?
NA045 C1/3-4/T3-1.51	HAS ADEQUATE FIRE EXTINGUISHING EQUIPMENT BEEN
NA045.	PROVIDED?
NA046 C1/3-4/T3-1.52	HAS ADEQUATE PROTECTION AGAINST NUCLEAR HAZARDS
NA046.	BEEN PROVIDED?
NA047 C1/3-4/T3-1.53	ARE WARNING DEVICES PROVIDED AS NECESSARY?
NA048 C1/3-4/T3-1.54	HAVE METHODS FOR RAPID REFUELING, RELUBRICATION,
NA048.	AND THE FILLING OF RESERVOIRS AND CONTAINERS
NA048.	BEEN PROVIDED?
NA049 C1/3-4/T3-1.55	HAVE ADEQUATE INSPECTION DOORS, PORTS, COVERS, ETC.
NA049.	BEEN PROVIDED?
NA050 C1/3-4/T3-1.56	HAVE QUICK DISCONNECT DEVICES FOR RAPID REMOVAL/
NA050.	REPLACEMENT OF COMPONENTS BEEN PROVIDED?
NA051 C1/3-4/T3-1.57	HAVE A MINIMUM NUMBER OF FASTENERS BEEN USED
NA051.	WHEREVER FEASIBLE?
NA052 C1/3-4/T3-1.58	ARE ALL PLUGS AND LUBRICATION FITTINGS READILY
NA052.	ACCESSIBLE?
NA053 C1/3-4/T3-1.59	ARE DRAINS FOR TANKS RESERVOIRS AND SUMPS PROPERLY
NA053.	LOCATED AND READILY ACCESSIBLE?
NA054 C1/3-4/T3-1.61	CAN MAINTENANCE BE ACCOMPLISHED ON THE EQUIPMENT
NA054.	WHILE TECHNICIANS ARE WEARING PROTECTIVE CLOTHING?
NA055 C1/3-4/T3-1.62	IS THE EQUIPMENT DESIGNED FOR MAINTENANCE UNDER
NA055.	ADVERSE WEATHER CONDITIONS?
NA056 C1/3-4/T3-1.63	ARE SPECIAL TOOLS AND ADAPTER KITS STORED IN OR
NA056.	NEAR THE EQUIPMENT ON WHICH THEY WILL BE USED?
NA057 C1/3-5/T3-1.64	ARE ALL LABELS CLEARLY LEGIBLE AND PROPERLY LOCATED
NA057.	FOR EASE OF PERFORMING INSPECTIONS/MAINTENANCE?
NA058 C1/3-5/T3-1.65	ARE OPERATIONAL AND MAINTENANCE MANUALS STORED IN
NA058.	OR NEAR THE EQUIPMENT THEY DESCRIBE?
NA059 C1/3-5/T3-1.66	HAS THE EQUIPMENT BEEN ADEQUATELY PROTECTED FOR
NA059.	HANDLING, STORAGE, TRANSPORTATION, ETC?
NA060 C1/3-5/T3-1.67	IS THE EQUIPMENT DESIGNED TO BE SELF-PACKAGING
NA060.	WHENEVER PRACTICAL?
NA061 C1/3-5/T3-1.68	ARE INSTRUMENT PANELS HINGED OR READILY REMOVEABLE
NA061.	FOR RAPID SERVICING, TESTING AND CALIBRATION?
NA062 C1/3-5/T3-1.69	IS ALL ELECTRONIC GEAR READILY REMOVEABLE FOR
NA062.	RAPID SERVICING, TESTING AND CALIBRATION?
NA063 C1/3-5/T3-1.70	HAS A COMPONENT MODULARIZATION DESIGN BEEN USED?
NA064 C1/3-5/T3-1.72	HAS MINIATURIZATION IN DESIGN BEEN USED, WHEREVER



NA064.	APPROPRIATE?
NA065 C1/3-5/T3-1.73	HAS THE UNIT BEEN DESIGNED FOR MINIMUM WEIGHT
NA065.	COMMENSURATE WITH STRUCTURAL REQUIREMENTS?
NA066 C1/3-5/T3-1.78	HAVE MINIMUM AND MAXIMUM VALUES FOR MTBF, MTR, AND
NA066.	DOWNTIME BEEN ESTABLISHED FOR THE EQUIPMENT?
NA067 A3/DN2G3/P1	HAVE LARGE OR HEAVY EQUIPMENTS BEEN DESIGNED WITH
NA067.	REMOVEABLE/REPLACEABLE UNITS TO FACILITATE
NA067.	PERFORMING MAINTENANCE ACTIONS?
NA068 L4/5-48	HAS THE POSSIBILITY OF DAMAGE TO UNITS DURING
NA068.	HANDLING AND INSTALLATION BEEN MINIMIZED?
NA069 L4/5-50	IS THE DESIGN SUCH THAT REQUIREMENTS FOR SPECIAL
NA069.	MAINTENANCE SUPPORT (GROUND-POWER CARTS, COOLING,
NA069.	ETC.) HAVE BEEN MINIMIZED?
NA070 11/167/1	HAS A COMPREHENSIVE PREVENTIVE MAINTENANCE PROGRAM
NA070.	BEEN ESTABLISHED?
NA071 11/167/2-3	ARE CHECKLISTS, TOOLS, MATERIALS, ETC AVAILABLE
NA071.	FOR PERFORMING PREVENTIVE MAINTENANCE?
NA072 11/167/10	HAVE CORROSION PREVENTION/CONTROL METHODS BEEN
NA072.	SPECIFIED?
NA073 11/167/12	HAVE CLEANING PERIODS/METHODS BEEN SPECIFIED?
NA074 11/167/11	HAVE CORROSION RESISTANT MATERIALS/FINISHES/SEALERS
NA074.	BEEN SPECIFIED?
NA075 11/167/13	ARE A MINIMUM NUMBER OF STANDARD NONINTERCHANGEABLE
NA075.	FLUIDS USED?
NA076 11/167/14	ARE FLUID LINES/DRAINS/PLUGS LOCATED TO MINIMIZE
NA076.	SPILLS/LEAKS?
NA077 11/167/15	ARE DRAINS AT LOW POINTS AND BLEED VALVES AT HIGH
NA077.	POINTS?
NA078 11/167/16	CAN FLUID PRESSURE BE CHECKED WITHOUT DISCONNECTING
NA078.	LINES?
NA079 11/167/17	ARE PRESSURE RELIEF AND CHECK VALVES PROVIDED
NA079.	WHEREVER THEY ARE NEEDED?
NA080 11/167/19	ARE LUBRICATION SCHEDULES PROVIDED?
NA081 11/167/20	ARE STANDARD LUBRICANTS APPLIED WITH STANDARD
NA081.	TOOLS AND DEVICES?
NA082 11/167/22	IS ONE STANDARD COLOR CODED FITTING USED FOR EACH
NA082.	LUBRICANT?
NA083 11/159/2	DOES THE FACILITY LAYOUT MINIMIZE PLACE-TO-PLACE
NA083.	MOVEMENT OF MEN AND EQUIPMENT?
NA084 11/159/3	DOES THE LAYOUT PROVIDE ADEQUATE SHOP, BENCH, AND
NA084.	STORAGE SPACE?
NA085 11/159/4	DOES THE LAYOUT ALLOW VISUAL AND VOICE-CONTACT
NA085.	BETWEEN TEAM MEMBERS?
NA086 11/159/5	DOES THE LAYOUT ALLOW ACCESS TO MOST SIDES OF ALL
NA086.	ITEMS OF EQUIPMENT?
NA087 11/167/7	IS THE STOCK ROOM/TOOL CRIB LOCATED CONVENIENT TO
NA087.	ALL WORK AREAS?
NA088 11/159/8	IS SPECIAL STORAGE PROVIDED FOR HAZARDOUS OR
NA088.	CONTAMINABLE ITEMS?
NA089 11/159/10	ARE PASSAGE WAYS ADEQUATE FOR ALL CARTS, STANDS,
NA089.	ETC. AND THEIR LOADS?
NA090 11/159/11	WILL PASSAGES AND DOORS ALLOW ENTRY AND REMOVAL
NA090.	OF ALL LARGE ITEMS?
NA091 11/159/15	ARE WORK SPACES FREE OF ALL HAZARDS?
NA092 11/159/16	IS ADEQUATE SPACE PROVIDED IN ALL WORK AREAS?
NA093 11/159/19	IS ILLUMINATION IN ALL WORK AREAS ADEQUATE?
NA094 11/159/21	ARE SAFETY AND AUXILIARY LIGHTS PROVIDED?
NA095 11/159/24	IS A CONTROLLED ENVIRONMENT PROVIDED?
NA096 11/163/1	DO MANUALS IDENTIFY ALL UNITS BY LOCATION AND
NA096.	FUNCTIONS?
NA097 11/163/2	DO MANUALS PROVIDE SCHEMATICS AND WIRING DIAGRAMS
NA097.	AT LEAST TO THE LRU LEVEL?
NA098 11/163/3	DO MANUALS DESCRIBE ALL UNCOMMON PARTS, TOOLS,
NA098.	CODES, ETC.?
NA099 11/163/4	DO MANUALS TELL HOW TO DETECT, LOCALIZE, ISOLATE,
NA099.	CORRECT AND CHECKOUT THE UNIT?

NA100 11/163/6	DO MANUALS DESCRIBE WHAT MAY GO WRONG, HOW TO PREVENT IT, AND HOW TO RECOVER IF IT HAPPENS?
NA100+	
NA101 11/163/7	DO MANUALS LIST TOOLS AND MATERIALS REQUIRED FOR EACH TASK?
NA101+	
NA102 11/163/9	DO MANUALS CLEARLY DESCRIBE ACCESS, BREAKDOWN AND ASSEMBLY METHODS?
NA102+	
NA103 11/163/11	ARE ALL ADJUSTMENT, ALIGNMENT, CALIBRATION, AND CHECKOUT PROCEDURES PROVIDED?
NA103+	
NA104 11/163/12	ARE SPECIAL INSTRUCTIONS PROVIDED FOR UNUSUAL CONDITIONS?
NA104+	
NA105 11/163/14	IS INFORMATION LOGICALLY ORGANIZED, QUICKLY FOUND, AND READILY USED?
NA105+	
NA106 11/163/20	DO DIAGRAMS DESCRIBE INTER CONNECTIONS AND RELATIONSHIPS BETWEEN ITEMS?
NA106+	
NA107 11/163/21	DO DIAGRAMS IDENTIFY INPUT/OUTPUT CONNECTIONS BETWEEN SUBASSEMBLIES?
NA107+	
NA108 11/163/22	DO DIAGRAMS IDENTIFY ALL TERMINALS, JACKS AND TEST POINTS?
NA108+	
NA109 11/163/23	DO DIAGRAMS SHOW VOLTAGE, CURRENT AND WAVEFORM AT EACH TEST POINT?
NA109+	

# MAINTENANCE TASKS

0A001 L4/5-44	ARE MAINTENANCE AND TEST EQUIPMENT COMPATABLE WITH THE SYSTEM?
0A001+	
0A002 L4/5-44	ARE ALL SPECIAL HANDLING INSTRUCTIONS CLEAR, CONCISE, AND ADEQUATE?
0A002+	
0A003 L4/5-44	CAN ALL UNITS BE READILY INSTALLED AND CONNECTED TO THE SYSTEM?
0A003+	
0A004 L4/5-44	HAVE READJUSTMENTS AT INSTALLATION BEEN MINIMIZED FOR UNITS THAT ARE ADJUSTED AT THE FACTORY OR DEPOT?
0A004+	
0A005 L4/5-45	ARE MINIMUM ADJUSTMENTS NECESSARY AFTER A UNIT HAS BEEN INSTALLED?
0A005+	
0A006 L4/5-45	DO ADJUSTMENTS COMPENSATE FOR ALL TOLERANCE BUILDUPS?
0A006+	
0A007 L4/5-45	HAVE PERIODIC ALIGNMENTS/ADJUSTMENTS BEEN MINIMIZED?
0A007+	
0A008 L4/5-45	HAVE THE NUMBER OF FIELD ADJUSTMENTS BEEN MINIMIZED?
0A008+	
0A009 L4/5-45	IS THE UNIT DESIGNED SUCH THAT IT CAN NOT BE DAMAGED BY CARELESSLY MADE ADJUSTMENTS?
0A009+	
0A010 L4/5-45	ARE ALL SPECIAL TECHNIQUES REQUIRED FOR REPAIR, REPLACEMENT OR ALIGNMENT OF A UNIT ADEQUATELY IDENTIFIED AND DOCUMENTED?
0A010+	
0A011 L4/5-45	ARE UNITS AND ASSEMBLIES MOUNTED SO THAT REMOVAL OF ONE DOES NOT REQUIRE THE REMOVAL OF OTHERS?
0A011+	
0A012 L4/5-46	ARE ALL PANEL LIGHTS EASILY REPLACED?
0A012+	
0A013 L4/5-46	WILL CIRCUITS TOLERATE THE USE OF JUMPER CABLES DURING MAINTENANCE?
0A013+	
0A014 L1/81/P20.C	ARE ALL ADJUSTMENTS INDEPENDENT SUCH THAT THERE ARE NO INTERACTIONS?
0A014+	
0A015 L1/81/P20.D	DO ALL CLOCKWISE ADJUSTMENTS PRODUCE AN INCREASING VALUE AND VICE-VERSA?
0A015+	
0A016 L1/81/P20.E	HAS INDEXING BEEN PROVIDED ON ALL ADJUSTMENTS?
0A016+	
0A017 L1/81/P20.F	ARE ADJUSTMENT KNOBS PROVIDED WHEREVER POSSIBLE?
0A017+	
0A018 L1/97/P B.3	ARE FIELD ADJUSTMENTS ACCESSIBLE WHEN THE UNIT IS PROPERLY INSTALLED?
0A018+	
0A019 L1/97/P B.4	HAS SEQUENTIAL ASSEMBLY OF A UNIT BEEN AVOIDED?
0A019+	
0A020 A2/DN2A1/P1.11	HAVE SELF-TESTING AND SELF ADJUSTING FEATURES BEEN PROVIDED WHERE APPLICABLE?
0A020+	
0A021 A2/DN2G2/P1.25	HAS REPAIR WELDING BEEN LIMITED TO THOSE AREAS AND LOCATIONS IDENTIFIED IN THE DESIGN DOCUMENTS?
0A021+	
0A022 C1/16-9/T16-3.1	ARE LUBRICATION FITTINGS STANDARDIZED SO THAT NO SPECIAL TOOLS OR EXTENSIONS ARE REQUIRED?
0A022+	
0A023 C1/16-9/T16-3.3	DO LUBRICATION INSTRUCTIONS IDENTIFY THE TYPE AND FREQUENCY OF LUBRICANTS REQUIRED?
0A023+	
0A024 C1/16-9/T16-3.4	ARE AREAS FOR THE TRANSFER AND HANDLING OF COMBUSTIBLES ISOLATED FROM OTHER WORK AREAS?
0A024+	
0A025 C1/16-9/T16-3.5	ARE FLUID REPLENISHING POINTS LOCATED TO PRECLUDE SPILLAGE DURING SERVICING?
0A025+	
0A026 C1/16-9/T16-3.6	ARE ALL FILLER OPENINGS READILY ACCESSIBLE?
0A026+	
0A027 C1/16-9/T16-3.9	ARE ALL FLEED VALVES LOCATED IN AN EASILY OPERABLE AND ACCESSIBLE POSITION?
0A027+	
0A028 C1/16-9/T16-3.10	ARE ALL DRAINS LOCATED IN AN EASILY OPERABLE AND ACCESSIBLE POSITION?
0A028+	
0A029 C1/16-9/T16-3.11	ARE DRAIN FITTINGS STANDARDIZED THROUGH OUT THE SYSTEM?
0A029+	
0A030 C1/16-9/T16-3.12	ARE VALVES AND PETCOCKS USED IN PREFERENCE TO DRAIN PLUGS?
0A030+	
0A031 C1/16-9/T16-3.13	ARE VALVES AND PETCOCKS CLEARLY LABELED TO INDICATE OPEN AND CLOSED POSITIONS?
0A031+	
0A032 C1/16-9/T16-3.14	DO DRAIN COCKS ALWAYS CLOSE WITH CLOCKWISE MOTION?
0A032+	
0A033 C1/16-9/T16-3.16	ARE DRAIN POINTS LOCATED SO THAT FLUIDS WILL NOT DRAIN ON EQUIPMENT OR PERSONNEL?
0A033+	
0A034 C1/16-9/T16-3.17	ARE DRAINS LOCATED AT THE LOWEST POINT TO PROVIDE

QA034.	COMPLETE DRAINAGE?
QA035 C1/16-9/T16-3.18	CAN FLUIDS BE DRAINED INTO CONTAINERS WITHOUT THE USE OF ADAPTERS OR PIPING?
QA035.	
QA036 C1/16-9/T16-3.20	ARE INSTRUCTION PLATES PROVIDED ON ALL UNITS THAT MAY REQUIRE DRAINING?
QA036.	
QA037 C1/16-9/T16-3.23	ARE THE SAME FUELS AND LUBRICANTS USED IN AUXILIARY EQUIPMENT AS IN THE PRIME HARDWARE, WHERE PRACTICAL?
QA037.	
QA038 C1/16-9/T16-3.24	ARE DIFFERENT FITTINGS USED FOR POINTS REQUIRING DIFFERENT OR INCOMPATIBLE LUBRICANTS?
QA038.	
QA039 C1/16-9/T16-3.25	ARE PRESSURE FITTINGS PROVIDED ON ALL BEARINGS REQUIRING LUBRICATION?
QA039.	
QA040 C1/16-9/T16-3.29A	ARE SNAP ACTION OIL FILLER CAPS PROVIDED WHEREVER PRACTICAL?
QA040.	
QA041 C1/16-9/T16-3.29B	ARE OIL FILLER TUBES ADEQUATE IN SIZE AND SHAPE?
QA042 C1/16-9/T16-3.29D	ARE OIL FILLER CAPS LOCATED EXTERNAL TO THE UNIT?
QA043 A1/8-15/F8-9.3	ARE LIQUID LEVEL INDICATORS PROVIDED WHEREVER APPROPRIATE?
QA043.	
QA044 A1/8-15/F8-9.2	HAS THE REQUIREMENT FOR SPECIAL TOOLS FOR FILLING AND DRAINING BEEN MINIMIZED?
QA044.	
QA045 A1/8-15/F8-9.1	ARE SERVICING POINTS FOR FILLING AND DRAINING READILY ACCESSIBLE BUT PROTECTED?
QA045.	
QA046 A1/8-15/F8-9.6	ARE FLUID LEVEL PLUGS PROVIDED WHERE IT IS ESSENTIAL TO AVOID OVERFILLING?
QA046.	
QA047 A1/8-16/F8-9.13	ARE OIL SEALS EASILY REPLACED?
QA048 A1/8-16/F8-9.13	ARE GASKETS EASILY REPLACED?
QA049 A1/8-16/F8-9.4	ARE GASKETS FOR DIFFERENT APPLICATIONS READILY IDENTIFIABLE?
QA049.	
QA050 A1/8-16/F8-9.8	ARE SEALS EASILY REPLACED?
QA051 L4/5-49	HAVE LUBRICATION POINTS BEEN MINIMIZED?



UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER W77-1706-TN01 <sup>✓</sup>	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) CHECKLISTS FOR THE QUALITATIVE ASSESS- MENT OF MAINTAINABILITY DESIGN FEATURES		5. TYPE OF REPORT & PERIOD COVERED
7. AUTHOR(s) A.N. Winter A. J. Fremer		6. PERFORMING ORG. REPORT NUMBER W77-1706-TN01
9. PERFORMING ORGANIZATION NAME AND ADDRESS ARINC Research Corp. <sup>✓</sup> 1222 E. Normandy Place Santa Ana, California 92702		8. CONTRACT OR GRANT NUMBER(s) F29601-77-C-0091 <sup>new</sup>
11. CONTROLLING OFFICE NAME AND ADDRESS U.S. AIR FORCE TEST AND EVALUATION CENTER Kirtland Air Force Base New Mexico 87115		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) U.S. Air Force Test And Evaluation Center Kirtland Air Force Base New Mexico 87115		12. REPORT DATE November 1977
		13. NUMBER OF PAGES 55
		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report)  UNCLASSIFIED/UNLIMITED		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number)		